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THE CLINICAL IMPORTANCE OF ACHLORHYDRIA*

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So much has been written on achlorhydria during the last twelve years that it might be thought that very little more could be said about it. But I think there is still room to discuss it from a somewhat wider point of view than has been possible until recently, by considering how it arises and how it comes to be associated with such a remarkable variety of diseases, and, most important of all, how the latter can be prevented by preventing the development of achlorhydria, or, when this fails, by curing the underlying condition instead of merely treating it symptomatically by the substitution of artificial for natural gastric juice. In order to do this I shall have to begin by referring to some fundamental physiological facts concerning the functions of gastric juice.

Functions of the Gastric Juice

1. *Peptic Digestion.*—The glands of the body of the stomach contain two kinds of cells: chief cells, which secrete pepsin, and parietal or oxyntic cells, which secrete hydrochloric acid. The most obvious function of the hydrochloric acid is to activate the pepsin so that it can digest proteins. This is, however, not an essential function, as tryptic activity in the small intestines is so efficient that digestion of meat is unimpaired in complete achlorhydria and after gastrectomy.

2. *Antiseptic Action.*—The antiseptic action of the acid is more important. It destroys streptococci and other organisms which are swallowed with saliva from the mouth and with mucus from the nose and pharynx. It also helps to protect against infection with bacteria present in food and drink. There is a good deal of evidence to show that bacillary and amoebic dysentery occur much more commonly in people with achlorhydria or hypochlorhydria than in those with a normal secretion of acid (Camps, 1933), and the same probably holds good for typhoid and other parenteric infections and for cholera. I am confident that the Services would save a great deal of invaliding if they took the precaution of giving test-meals to all men before sending them to the Tropics in order to eliminate those with achlorhydria.

Knott (1927) has shown that the increased alkalinity of the contents of the small intestine which results from achlorhydria favours its invasion with *B. coli* from the colon; this organism is consequently found in large numbers in the duodenum, which is normally quite sterile. The spread of *B. coli* occurs with extraordinary rapidity. The stomach and duodenum are infected within a few hours of the perforation of a gastric or duodenal ulcer and the consequent inhibition of the secretion and movements of the stomach (Löhr, 1924). This explains why the peritoneum is sterile if an operation is performed within six hours of perforation but after that becomes progressively more heavily infected.

Infection of the small intestine with streptococci from above and with *B. coli* from below, combined with the mechanical irritation of the mucous membrane by food which is insufficiently softened and broken up owing to the deficient quantity and solvent activity of the gastric juice, is very apt to lead to chronic enteritis. Moreover, when the gastritis which caused the achlorhydria is a result of the action of some swallowed irritant, the small intestine is liable to be damaged at the same time as the stomach. The functions of the small intestine are difficult to investigate and consequently very little is known about their derangements, but we are gradually accumulating evidence that many symptoms ascribed to the stomach and colon are really due to disorders of the small intestine. Thus chronic diarrhoea is frequently associated with achlorhydria; though these cases, which are sometimes wrongly diagnosed as colitis, are now generally regarded as gastrogenous in origin because of the rapid disappearance of the diarrhoea with acid, true enteritis is often present as well.

Cholecystitis is frequently associated with achlorhydria, and is, I believe, generally due to an ascending *B. coli* infection from the duodenum (Hurst, 1932). Even when free acid is present in the stomach the symptoms often date from an attack of acute gastritis, in which achlorhydria may occur temporarily, as Beaumont (1833) demonstrated in his observations on the effect of a drinking bout on Alexis St. Martin, or from pregnancy, which is also often associated with temporary achlorhydria. On restoration of normal gastric secretion the infection dies out from the duodenum, leaving, however, the seeds for the development of inflammation and stone formation in the gall-bladder. The nausea which is sometimes associated with achlorhydria is probably often due to the accompanying cholecystitis.

3. *Haemopoiesis.* (*a*) *Absorption of Iron.*—The diet taken by most people contains amply sufficient iron to maintain the normal percentage of haemoglobin in the blood. When, however, the diet is deficient or excessive quantities of blood are lost in menstruation or from other sources, a microcytic anaemia results if an insufficient proportion of the iron in the food is absorbed. This may occur in achlorhydria, but it is uncertain whether it is due to there being no hydrochloric acid to convert the organic iron in the food to a form suitable for absorption, or to a failure of absorption by the small intestine, which is so frequently in an unhealthy condition when achlorhydria is present. The latter is probably the true cause, as the simple administration of hydrochloric acid has no effect on the anaemia in such cases, though when large doses of inorganic iron are given the intestines are still capable of absorbing a sufficient proportion for rapid recovery to take place. (*b*) *Production of Haemopoietin.*—Castle has proved that the gastric juice contains a substance, the "intrinsic factor," which acts on something present in protein food, the "extrinsic factor," to produce the normal stimulant for the formation of red corpuscles by the bone marrow, its absence leading to Addisonian (pernicious) anaemia. Wilkinson's (1933) investigations indicate that the intrinsic factor, which he calls "haemopoietin," is an enzyme. According to Meulengracht (1934) it is produced by the glands in the pyloric end of the stomach and probably the fundus, which contain none of the chief and parietal cells of the glands of the body of the stomach, which secrete respectively pepsin and hydrochloric acid.

4. *Production of Neuropoietin.*—The gastric juice contains an enzyme which is produced by the same glands and acts

* Read in opening a discussion in the Section of Medicine at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

in the same way as haemopoietin to form a substance which is essential for the normal nutrition of the central nervous system. This enzyme, which may be called "neuropoietin," is not identical with haemopoietin, as either may be absent from the gastric juice whilst the other is present. Its absence leads to degeneration of the posterior and lateral columns of the spinal cord. Though the resulting disease is generally associated sooner or later with Addison's anaemia, this is not invariably the case, and degeneration of the cord was found in only 85 per cent. of fatal cases of Addison's anaemia in the days before the introduction of treatment by liver. Salus and Reimann found haemopoietin in the gastric juice of five patients with subacute combined degeneration of the cord and achlorhydria whose blood picture was normal, though it was absent in seven other patients who had Addison's anaemia in addition to the spinal degeneration.

Pathogenesis of Achlorhydria

Out of every hundred normal people about ten secrete more and ten secrete less hydrochloric acid than the remaining eighty (Bennett and Ryle, 1920). The hyperchlorhydria and hypochlorhydria are expressions of what I have called respectively the hypersthenic and hyposthenic gastric constitutions, and both are often familial. They are compatible with perfect general health and good digestion, but whereas the 80 per cent. of people with the average type of stomach are likely to pass through life without developing any serious gastric disorder, most of those with hyperchlorhydria suffer sooner or later from gastric or duodenal ulcer, and most of those with hypochlorhydria develop achlorhydria with its many associated troubles. In both cases this is generally the result of the chronic gastritis which follows prolonged mechanical or chemical irritation of the gastric mucous membrane. Mechanical irritation may be caused by insufficient mastication when food is bolted or dentures are deficient, and by the consumption of excess of coarse vegetable material, including the roughage which is so widely and unwisely recommended for constipation.

The chief chemical irritants are alcohol, especially when taken undiluted on an empty stomach or mixed with other irritants in the form of cocktails; strong tea and coffee; excess of curry, pickles, pepper, and mustard; drugs such as bromide, iodide, mercury, digitalis, quinine, and salicylates, which are taken continuously for long periods; and the poisons which are swallowed when too many cigarettes are smoked. Chronic gastritis is also a common sequel of the acute gastritis caused by food poisoning and by the excretion of toxins by the gastric mucous membrane in acute infections such as gastric influenza, scarlet fever, and septicaemia. These exciting causes are so universal that very few of those predisposed by the hypersthenic or hyposthenic gastric constitution escape. Consequently 10 per cent. of people dying after the age of 40 are found to have an active gastric or duodenal ulcer or the scar of a healed ulcer (Stewart, 1929), and at least 10 per cent. of people over 40 have achlorhydria (Hartfall, 1932).

It is still uncertain whether achlorhydria is ever congenital and due to an inborn error of secretion. In their investigations on a hundred healthy students Bennett and Ryle found that four of the ten with deficient gastric secretion had complete achlorhydria. Combining their statistics with those of Baird, Campbell, and Hern (1924), Wright (1924), and Apperly and Semmins (1928), it is found that 3.4 per cent. of 497 healthy students and children had achlorhydria. But the achlorhydria may have been acquired as a result of acute gastro-enteritis or some general infection in infancy or early childhood. Achlorhydria is often familial; the associated abnormality of the gastric mucous membrane rather than any constitutional weakness of the bone marrow or spinal cord is the cause of the frequent occurrence of Addison's anaemia and subacute combined degeneration of the spinal cord in more than one member of a family. Records have been published of about 140 families in which two or more members in one to four generations were affected with Addison's anaemia with or without subacute combined degeneration of the cord, and fifty-nine families in which one of these diseases occurred in one or more members of a family and achlorhydria in others, some of whom were young children (Hurst, 1927, Conner, 1930, Wilkinson and Brockbank, 1931). Ellis and Frank have both observed twins suffering from Addison's anaemia. All these facts point strongly to the achylia being constitutional. It is possible, however, that the constitutional condition was an extreme degree of hypochlorhydria, which would be likely to result in achlorhydria at an early age and in Addison's anaemia or combined degeneration of the cord in later life in several members of a family. That achlorhydria may be a sequel of familial hypochlorhydria was shown by two sisters under my care with achlorhydria; treatment of the gastritis led to restoration of the secretion of acid in one but not in the other. Moreover, Wilkinson and others have found that hypochlorhydria as well as achlorhydria is frequently present in other members of the family of patients with Addison's anaemia.

The strongest evidence in favour of the existence of a true constitutional achylia is the occasional discovery of normal, or almost normal, gastric mucous membrane in patients with Addison's anaemia. Passey (1922) found normal oxyntic cells and no evidence of inflammation in a fragment of gastric mucous membrane removed during an operation for appendicitis in a patient of mine with Addison's anaemia and achlorhydria.

Effect of Gastritis on the Gastric Juice

The gastric mucous membrane attempts to protect itself against mechanical and chemical irritants by the secretion of mucus. This mucus is probably produced by the tall columnar cells which line the whole surface of the stomach; it is independent of the dissolved mucus which is always present in normal gastric juice and is presumably secreted by some of the cells of the gastric glands. It is such a weak alkali that its buffer action is hardly appreciable, but it contains sufficient sodium bicarbonate to neutralize some of the acid of the gastric juice (Bonis, 1930). At the same time some of the tenacious mucus adheres to the surface of the mucous membrane and blocks the mouths of the secreting tubules, thus reducing the quantity of gastric juice which can gain access to the lumen of the stomach. The inflammation of the gastric mucous membrane depresses the functional activity of its glands. The oxyntic cells are the most delicate, so that the hydrochloric acid is the first constituent to be seriously affected. If the healthy stomach produced a gastric juice of average or more than average acidity, the reduction of acidity brought about in these three ways is of no importance. If, however, the healthy stomach secretes a gastric juice of less than average acidity, as occurs in individuals with the hyposthenic gastric constitution, achlorhydria results.

In about 60 per cent. of cases the excess of mucus is sufficient by itself to account for the achlorhydria, as on giving a second test-meal after washing the stomach with plain water so as to dislodge the mucus, free acid is found in some of the fractions. In an additional 20 per cent. of cases removal of the exciting causes of the gastritis and treatment of the inflamed mucous membrane by lavage are followed by restoration of normal secretory activity of the stomach.

In rare cases the initial inflammation is so intense that some or all of the oxyntic cells are at once destroyed.

In severe chronic gastritis with achlorhydria the mucous membrane is invaded by streptococci swallowed from the mouth, and progressive atrophy of the glands takes place. Restoration of secretion is then impossible, and the injection of histamine produces no response, even if all active inflammation is overcome by treatment, the condition being, in fact, a true achylia gastrica and not merely achlorhydria. In true achylia most of the cells secreting pepsin are also destroyed.

The production of haemopoietin and neuropoietin by the mucous membrane of the pyloric end and fundus of the stomach is very rarely diminished sufficiently to give rise to Addison's anaemia and subacute combined degeneration of the spinal cord, except in the severe cases of gastritis in which true achylia occurs. In exceptional cases of Addison's anaemia the damage to the mucous membrane is not irreparable. I have had three cases in which the secretion of hydrochloric acid returned as a result of treatment of the gastritis; in one of these, recorded by Shaw in 1926, the patient is still after eleven years completely well with normal gastric juice and normal blood, though he has never taken stomach extract or liver. In the other two cases the restoration of gastric acidity was not accompanied by any return of haemopoietin production, and the patients still require liver. Similar cases of restoration of acidity have since been recorded by McPeak and Neighbors, Wilkinson, Heeres, Seyderhelm and Opitz, and Davidson. In Davidson's case haemopoietin is now also secreted, so his patient can be classed with my first case as an example of complete recovery. In those cases in which the secretion of hydrochloric acid, but not of haemopoietin, returns, the glands in the pyloric end and fundus of the stomach, but not those of the body, are presumably degenerated, just as they must be in the 1 per cent. of patients with Addison's anaemia in whom free acid is present throughout. Hydrochloric acid continues to be secreted in subacute combined degeneration of the cord, though no neuropoietin is produced, in about the same proportion of cases.

Post-Operative Achlorhydria

1. *Gastro-jejunostomy.*—Partial neutralization by the alkaline duodenal secretions which enter the stomach through the stoma after gastro-jejunostomy, together with the increased rapidity of evacuating, reduces the quantity of free acid present. As, however, the operation is generally performed for duodenal ulcer, in which hyperchlorhydria is almost always present, it is rare for the fall to be sufficient to lead to achlorhydria. When achlorhydria is present after gastro-jejunostomy, the operation has generally been needlessly performed on a patient who already had achlorhydria, or on one with a chronic gastric ulcer in whom the original hyperchlorhydria had been replaced by hypochlorhydria as a result of chronic gastritis. In rare instances, however, the hyperchlorhydria of a duodenal ulcer may be followed by achlorhydria after gastro-jejunostomy. This appears to be due to exceptional severity of the chronic gastritis which always occurs when excess of bile enters the stomach, but which fortunately does not often give rise to symptoms.

Though the achlorhydria makes it impossible for an anastomotic ulcer to develop, it is not an unmixed blessing. Chronic enteritis with diarrhoea and chronic cholecystitis are occasional sequels. Simple achlorhydric anaemia may develop under the same conditions as those which lead to its occurrence in ordinary achlorhydria. I have seen one case of the kind in a man (Cosin and Hurst, 1930) and one in a woman, and one male and fifteen female cases have been recorded by Witts, Davies, and Meulengracht, the haemoglobin varying between 24 and 70 per cent. and the interval after the operation between four and twenty-five years.

The gastritis following the operation may be of such severity that the gastric juice is not merely neutralized, but is no longer secreted, and the achylia may then be associated with absence of haemopoietin or neuropoietin. I know of nine cases in which these diseases followed gastro-jejunostomy; in the majority nothing was known about the gastric acidity before the operation, but one patient of mine had a duodenal ulcer with hyperchlorhydria and developed achylia with Addison's anaemia and subacute combined degeneration of the cord eighteen months after gastro-jejunostomy (Glanvill and Hurst, 1930), and Salus (1932) has recorded two fatal cases of subacute combined degeneration of the cord without anaemia which appeared fifteen years after gastro-jejunostomy, test-meals having shown that free acid was present before but absent after the operations.

2. *Complete and Partial Gastrectomy.*—One would expect the complete achylia which follows removal of the entire stomach to be followed before long by Addison's anaemia and subacute combined degeneration of the cord, owing to the loss of the glands which produce haemopoietin and neuropoietin. This occurred in cases described by Dennig, Hochrein, Poole and Foster, Ungley, and possibly in a patient of Moynihan's. On the other hand, Mr. H. B. Butler of Guildford tells me that a patient on whom he performed complete gastrectomy in 1926 has shown no signs of anaemia or nervous disorder since, although he has had neither stomach extract nor liver, and Walters (1933) described a similar case two years after operation.

Partial gastrectomy is frequently followed by simple achlorhydric anaemia. As the fundus probably secretes haemopoietin and neuropoietin, Addison's anaemia and subacute combined degeneration of the cord develop only in the exceptional cases in which severe atrophic chronic gastritis involves the remaining portion of the stomach. In 1931 I collected five cases of this kind, and since then at least seven others have been recorded. We always give a test-meal after operations on the stomach. If achlorhydria is present there is less need for prolonged care in diet than if hyperchlorhydria persists, as an anastomotic ulcer cannot develop, but in such cases we advise the patients to take 30 grains of iron and ammonium citrate three times a day for one week in every four, and some form of liver at least once a week for the rest of their lives, as a safeguard against the development of simple and Addisonian anaemia.

Achlorhydria and Carcinoma of the Stomach

Achlorhydria is present in about 65 per cent. of patients with carcinoma of the stomach. It was formerly believed that the achlorhydria was a result of the carcinoma, but in my Schorstein Lecture of 1929 I brought forward evidence to show that the achlorhydria is really caused by chronic gastritis which is present before the growth develops, the growth being a result of malignant degeneration of the chronically inflamed mucous membrane. All the evidence I have been able to collect since then confirms this theory. I know of no case in which free acid was found when a growth was first recognized and disappeared at a later date. The hyperchlorhydria remained unaltered in three patients with chronic ulcers which subsequently underwent malignant degeneration. In another case of ulcer-cancer, in which operation was refused, the acidity actually rose whilst the carcinoma was growing, presumably owing to the favourable effect on the associated gastritis of the diet and lavage which

kept the patient comparatively free from pain. A similar rise was observed by Polland and Bloomfield (1931) in two cases of carcinoma after an interval of four and six months respectively. On the other hand, I have had four patients in whom achlorhydria was known to be present before the carcinoma developed, and I have found records of at least nineteen similar cases.

As carcinoma follows chronic achlorhydric gastritis, which may also cause simple anaemia, Addison's anaemia, and subacute combined degeneration of the cord, it is natural that these conditions sometimes occur with or precede the development of a growth. Thus carcinoma of the stomach developed in a patient of mine who had recovered from severe simple achlorhydric anaemia as a result of treatment with iron. The occasional association of carcinoma of the stomach with Addison's anaemia and subacute combined degeneration of the cord has long been recognized ; I have myself seen five such cases, and at least twenty-two others have been recorded (Wilkinson). Now that most patients with Addison's anaemia can be kept free from recurrence indefinitely with stomach extract or liver, an increasing number of them will develop carcinoma of the stomach if my theory is correct. I have seen two such cases, in one of which carcinoma developed nine years after the onset and four years after the symptomatic cure of Addison's anaemia as a result of treatment with liver (Plummer, 1931). Dyke and Harvey (1933) found that three out of fifty-two patients with Addison's anaemia under treatment died in a period of five years from carcinoma of the stomach, and from inquiries I have made among physicians who have had many cases of Addison's anaemia under their care I find that a good many cases of this kind have now been observed.

The association of cancer and Addison's anaemia with achlorhydria was strikingly demonstrated in the history of a family described by Borovanská-Felklová, in which a man died of carcinoma of the stomach, his eldest son had Addison's anaemia and subsequently developed carcinoma of the stomach, two other sons had Addison's anaemia, and the fourth had achlorhydria alone.

In almost every undoubted case of ulcer-cancer in which a test-meal has been given free acid was present in spite of the fact that the history was often very long, whereas when the evidence pointed against the growth being secondary to a simple ulcer, achlorhydria was generally present, even if the test-meal was given at a very early stage of the disease (Orator, 1925, Stewart, 1931). Free hydrochloric acid was found in all but one of eleven cases of carcinoma of the stomach with more than eighteen months' history, whereas seventeen out of nineteen with a history of less than six months had achlorhydria ; these statistics of my own (1931) are confirmed by those of Panton and Tidy (1910), Orator, and Stewart. The chance of long survival after a successful gastrectomy is greater in patients with achlorhydria than in those with free acid (Hartman, 1921), although the reverse would be the case if achlorhydria was the result of the presence of a growth in a stomach which had hitherto produced free acid.

Cramer (1934) has shown that the total incidence of cancer is the same in all nations, both sexes, and in all classes, although there are wide differences in the relative frequency in which different organs are involved. This indicates that a constitutional tendency for cancer to develop exists in a certain proportion of human beings, and that the organ involved must depend upon local conditions. I have long believed that cancer never develops in a healthy stomach. In about 25 per cent. of cases malignant degeneration occurs in a simple ulcer and in the remainder it occurs in chronically inflamed mucous membrane, the former being always associated with the presence of free hydrochloric acid and the latter generally with achlorhydria, though the free acid and the achlorhydria have, *per se*, nothing to do with it. It is the association of the constitutional tendency to cancer with one form of the hypersthenic gastric constitution on the one hand and with the hyposthenic gastric constitution on the other which results in cancer of the stomach. At present we have no knowledge of how the cancer constitution can be controlled, but it should be possible to prevent the development of cancer of the stomach by preventing chronic gastric ulcer and chronic gastritis, or, when this fails, recognizing and overcoming them at as early a stage as possible. Prophylaxis consists in preventing the various exciting causes of ulcer and gastritis which have already been described, and which, trivial as they may appear to be, are none the less of supreme importance.

Treatment

Until recently it was assumed that the discovery of achlorhydria was an indication for treatment with hydrochloric acid. It is true that many of the associated symptoms can be overcome by this means, but the underlying gastritis remains unaltered and may become progressively worse. It may finally affect the production of haemopoietin and neuropoietin, and the chronically inflamed mucous membrane may undergo malignant degeneration. It is therefore clear that the gastritis itself should always be treated. This has resulted in the return of secretion of acid in no less than 82 per cent. of our patients (Hartfall, 1932), who thus have the advantage of secreting their own gastric juice instead of having to buy it from their chemist, and the treatment may also prevent the development of Addison's anaemia, subacute combined degeneration of the cord, and carcinoma of the stomach.

Pyorrhoea must be completely overcome by conservative measures when possible, but otherwise by extraction ; infected tonsils must be enucleated, and sinus infection must receive appropriate treatment. It is a good plan to give the patient nothing but milk or milky feeds for the first few days of treatment. In the severe cases in which blood is present in some of the fractions of a test-meal, or, as occurs more frequently, occult blood is found only in the stools, the strict diet should be continued till the blood has disappeared. As a rule, two or three weeks suffice, but in exceptional cases of hypertrophic or polypoid gastritis, in which the danger of malignant degeneration is probably considerable, a longer period may be required. The patient is subsequently given an unirritating diet for six months, or, if the achlorhydria persists, for the rest of his life. He should be teetotal at first and later should confine his drinks to lunch and dinner or immediately after. He should never indulge in spirits or cocktails on an empty stomach. Smoking should be prohibited during the period of strict treatment ; after that it may be allowed in moderation, preferably after meals, and the swallowing of irritating juice should be prevented by the use of clean pipes and of cigarettes with a wool plug in the mouthpiece.

The stomach should be washed out every morning with dilute hydrogen peroxide (1 drachm to the pint) until the washings are clear. The treatment should be continued until no mucus is brought away. It is then given on alternate days, later twice a week, and finally once a week for two or three months. In severe haemorrhagic cases 1/2 to 1 part per thousand silver nitrate solution should be used instead of hydrogen peroxide in the early stages. When the washings no longer contain mucus a second test-meal must be given, as it is only necessary to prescribe hydrochloric acid for the 20 per cent. of patients in whom achlorhydria is found to be still present.

From 1 to 2 drachms of the dilute acid (*British Pharmacopoeia*) are given in 5 to 10 ounces of water, to which the juice and pulp of an orange have been added. As in these residual cases the secretion of pepsin is generally reduced, a saltspoonful should be added to the mixture. The first dose should be taken fasting before breakfast, when its antiseptic action is not impaired by partial neutralization with alkaline food. The second is given as a beverage with lunch, and the third with dinner. Patients rapidly get accustomed to it, and should rarely have any difficulty in taking it regularly for the rest of their lives.

Conclusion

Thirty years ago Professor Knud Faber of Copenhagen came to the conclusion that achlorhydria is always secondary to gastritis, and he has maintained it ever since. When shortly after the war I first became interested in the subject I was so impressed with the constitutional factor that I was inclined to doubt whether gastritis was of any importance at all. I now realize that gastritis and constitutional factors are of equal importance. Without gastritis there is no achlorhydria, but gastritis does not cause achlorhydria unless the patient is predisposed by having the hyposthenic gastric constitution. Gastritis in the presence of the hypersthenic gastric constitution may lead to duodenal ulcer and gastric ulcer, and a gastric ulcer may become malignant, but achlorhydria does not develop. It is the conjunction of the apparently trivial causes of gastritis with the hyposthenic gastric constitution which leads to achlorhydria, and the conjunction of these with the constitutional predisposition to cancer which leads to carcinoma of the stomach.

I expect that this is the last time there will be a discussion on achlorhydria, for the problem has shifted, and we must in future discuss gastritis, its causation, early diagnosis, treatment, and prophylaxis, just as we discuss nephritis rather than albuminuria. It is gastritis which causes achlorhydria, and gastritis, not achlorhydria, which causes Addison's anaemia and subacute combined degeneration of the cord and predisposes to carcinoma of the stomach. The prophylaxis of gastritis is the prophylaxis of these diseases. We may therefore look forward to the time when the prevention of gastritis, and, when prevention fails, its early recognition and adequate treatment, will lead to the disappearance of cancer of the stomach, which every day of the year claims over forty victims in Great Britain.

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ACUTE AND CHRONIC SPRAINS*

BY

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I think the Section is wise to have selected for discussion "Acute and Chronic Sprains," so common in occurrence, but so little discussed, that it is well for us to review our ideas and be sure that they are based on sound principles. These conditions and their treatment did not attract us in our student days; they were not big enough. Who ever heard of an out-patient dresser, or even a house-surgeon, who was really interested in a sprained ankle? And yet when the doctor starts in practice it is the minor injury, far more than major surgery, which forms the bulk of the surgical side of his practice. His reputation as a good doctor will be made not by his knowledge and management of cerebral tumours, but by his handling of the sprained wrist and the Colles fracture. I would focus your attention on what passes as minor surgery, and would remind you that it is only "minor" within the shelter of the hospital walls, and assumes very different proportions when we are faced with the same problem in after-life.

We will consider the acute sprain and its management, and then pass on to the consideration of those sprains which fail to clear up and become chronic. But, before entering into a discussion on the diagnosis and treatment, certain points in the anatomy and physiology of joints must be recalled in order to be sure that our treatment is based on a clear appreciation of the underlying principles.

Physiology of Joint Movements

The essential factor to recognize is the importance of the muscles. Many complex structures go to form a joint—bones, cartilage, ligaments, and so on—but for any real understanding of the pathology of joints the role of the muscles must be emphasized.

Muscle is the first line of defence of a joint against injury, and protects it all the time against the repeated though small injuries which are met with in everyday life. If a false step is taken in walking and the balance momentarily lost, it is muscle action which prevents a strain or sprain of the ankle- or knee-joint if we are to avoid injury. If the force is too great, or is applied for too long a time, the muscle gives way; it can no longer protect the joint, and the force then falls on the second line of defence—namely, the ligaments. Here once again consequences depend on the degree of force. If the latter is slight, the ligament may withstand strain, and no ill effect will follow. If it is moderate, some fibres of the ligament will tear, generally from one or other attachment, and a sprained joint results. If the force be severe, a ligament may tear in its entirety, perhaps taking with it a small flake of bone from the point of its insertion or tearing away from its periosteal attachment, and a sprained joint results. Finally, if the force be very severe or prolonged, first the muscle, then the ligament, and finally the bone itself yields, resulting in a fracture.

This conception must be remembered, and we must guard against thinking of a fracture as a broken bone, or of a sprain as a torn ligament; we must not forget the all-important fact that it is on muscle that the first strain falls. Indeed, the fracture is often the least important part of the injury—that is, when considered from the point of view of solution of continuity in the bone. For example, a sprained back with fracture of the transverse

* Read in opening a discussion in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

process of a vertebra is, academically speaking, a fracture, but it is the muscle injury, the tearing of muscle attachment, the haematoma, and the effect on soft parts which should take precedence in determining the appropriate treatment.

Partial rupture of a ligament, the tearing of a few fibres, is far more common than a complete rupture. The determination of the degree of injury is essential to a rational treatment of that injury. A complete tearing away of the attachment of the internal lateral ligament of the knee—in my experience a rare event—will necessitate at least prolonged fixation and protection, or even operative repair. The far more common tearing of a few fibres at the femoral attachment of this ligament is ill suited to such prolonged fixation, and recovers more quickly if appropriate means are taken to aid and encourage early functional use of the joint.

Diagnosis

The diagnosis of the acute sprain is self-evident, and in practice it is only necessary to exclude fracture. Careful case-taking or history is of importance, and the clinical examination must be thorough. The ultimate diagnosis of fracture will be decided by *x*-ray examination, but the clinician should be able to form a fair idea whether the sprain is uncomplicated or whether a fracture without displacement coexists. The site of maximum tenderness on pressure will generally give the clue. Tenderness over a ligamentous attachment is strong presumptive evidence of sprain ; localized tenderness over the bone, at some other point, suggests fracture.

It cannot be emphasized too strongly or repeated too often that *x*-ray examination is an essential part of the clinical investigation of every patient in whom the symptoms complained of follow injury. Failure to observe this rule may lead the practitioner into all kinds of trouble. It will not help him to say that the fracture found at some later examination is trivial, and that its earlier discovery would not have altered his treatment. He must foresee in every injury the possibility of a medico-legal action, and he must safeguard himself as well as his patient. The case in which an injury to the back has resulted in a crush fracture of the spine is within the experience of most of us. How often does this injury pass unrecognized, with what disastrous results, and yet how simple is the *x*-ray diagnosis. The split fracture of the fibula without displacement and the fracture of the carpal scaphoid are common examples of bone injury frequently undiagnosed because of the failure to have an *x*-ray examination.

A further word of warning is needed. An *x*-ray plate in itself will not suffice. The *x*-ray examination must be thorough. The radiographs must be taken in two planes, or, if need be, stereoscopically. In certain situations a radiograph of the equivalent joint on the uninjured side should be taken for comparison ; this is useful in young patients in whom the epiphyses are still unjoined—for example, the child's elbow. And the *x*-ray plates must be interpreted by someone accustomed and experienced in such interpretation. He may be a radiologist or a surgeon ; he must know what he is looking for, so that he reads neither too little nor too much in the picture.

Treatment of Acute Sprains

The line of treatment on which most of us were brought up in our hospital days leaves much to be desired and is rightly criticized. Hot lead lotion, evaporating lotion, a bandage, and rest sufficed for the bulk of patients in our casualty departments, and formed the recognized treatment of the textbooks. If we excluded a fracture by *x*-ray examination, we were content to let these patients work out their own salvation on these or similar lines.

The more general introduction of massage and physical treatment in our hospitals improved matters, but unfortunately these departments do not seem to attract the average medical student, who may well pass through his whole career without any very clear idea of what they accomplish, because he does not take the trouble to attend. Those of us who are called upon to lecture or to demonstrate to post-graduates must be struck by the interest and the eagerness to learn the modern treatment of these simple injuries which is shown by the practising doctor.

Now what should be the treatment of an acute sprain? As an example, let us imagine an acute inversion sprain of the ankle seen an hour or two after the injury. The region of the ankle is swollen and painful, and there is tenderness on pressure in front and to the outer side of the joint. The anterior fasciculus of the external lateral ligament is partly torn from its attachment. The principles of treatment can be described under three headings: (1) pressure to limit the swelling ; (2) protection to limit and prevent further damage ; and (3) encouragement of function to promote recovery.

PRESSURE

Pressure can be applied by firm bandaging over layers of cotton-wool, and in the example chosen the bandage should include the heel. The more usually applied figure-of-eight bandage omitting the heel is insufficient and fails to give support just where it is most needed. This pressure bandage, if applied early, limits the amount of the swelling ; if the ankle is already swollen, it is useful in getting rid of such swelling.

PROTECTION

The firm bandaging protects for the first thirty-six hours, and then, if necessary, this should be replaced by adhesive plaster strapping. The strapping starts above the ankle on the inner side, passes down under the heel, and up on the outer side. The foot is held slightly everted to take strain off the injured ligament while this support is being applied. Many layers, each superimposing the other by about one-third, are used. The strapping does not interfere with function, but protects the early stages of repair from undue strain and further damage and gives the patient a sense of comfort and security.

If the sprain be only slight strapping may be dispensed with, and the support of the compression bandage will in itself suffice. It is all a question of degree. While a very slight strain will not need protection because the muscle recovery is rapid, the moderate or severe one will recover more quickly with support ; the latter does not hamper movement, which is physiological and to be encouraged. Further protection may be provided by what is called " wedging the heel " and floating it out. This is seldom needed unless the sprain is a frequently recurring one, such as I see occasionally, generally in schoolgirls. These recurrent sprains may manifest other features, as will be described under chronic sprains, but they can be guarded against by a simple device—namely, raising the outer side of the heel some three-sixteenths of an inch and sometimes " floating out the heel " in addition.

ENCOURAGEMENT OF FUNCTION

By this term I mean that early use of the affected limb should be allowed. In the example we are considering—inversion sprain of the ankle—the patient is allowed to put weight on the limb and need not lay up. He is encouraged to use the foot. This does not mean that he is told to go for a five-mile walk. I should not play a round of golf if I had recently sprained my ankle and it was painful, but with some support and the muscles

appropriately treated I should expect to be able to walk about and do my work from the first.

At this point we must recall what has been already said about the all-important part that muscle plays in controlling joint function, since we must concentrate on restoring muscle tone and encouraging the muscle to recover. Faradic stimulation—a method which has been described as graduated contraction—is of the greatest service. This method, as I have already stated more than once, I learned from Mr. Morton Smart in 1910, and I have used it and advised it continually since then. Essentially it consists in making muscle contract by an electrical stimulus, and both the degree and the rate of contraction are controlled by varying the stimulus. I will not enter into details of the treatment, but would emphasize its importance. Concurrently with electrical treatment massage is useful. This aids in the removal of swelling, mechanically getting rid of oedema, and improving the circulation. We generally combine electrical stimulation and massage; the one complements the other, even though the alternate contraction and relaxation, which is electrically controlled, produces what one may term auto-massage. Massage should never cause pain; it should be gentle and sedative in effect, and the small area, the site of maximum tenderness over the ruptured fibres, can be avoided.

Treated in this way, but depending on the degree of severity, a simple uncomplicated sprain should rapidly improve. The muscle quickly recovers tone, the torn structures unite, the swelling disappears, and the all-too-common sequence, the chronic sprain, is prevented.

Rotation Sprain of the Knee

There are sprains, however, which take a long time to clear up; they cannot be hurried. The commonest example is rotation sprain of the knee, such as is caused in a ski-ing accident. These severe sprains of the knee are often mistaken for torn and displaced semilunar cartilages, largely from the fact that a protective muscle spasm limits movement some 10 degrees short of full extension. The same principles should guide us in our treatment, and we must be confident of our diagnosis, for these sprains take many weeks, or even months, to recover. Unless we are familiar with this syndrome, and are true to our principles, we shall have difficulty in persuading the patient that the long period of partial incapacity is unavoidable, and forced movements or operation may be advised under a mistaken conception of the pathology.

Chronic Sprains

A simple sprain which is neglected or inefficiently treated may clear up if the injury is only trivial, but if the degree of damage is more severe symptoms will persist or will recur, and a condition that may be called a chronic sprain follow. The most common sequelae of sprains are: (1) persistent pain; (2) muscle atrophy; (3) limitation of joint movement; and (4) recurrent synovitis.

If the acute sprain be correctly treated these sequelae will be avoided. We must remember the importance of the time factor, which has been emphasized in considering the rotation sprain of the knee. The chronic sprain has supplied the main field of work for the bone-setter and the osteopath, and, to a large extent, continues to do so, both in this country and in America. One is often asked what the irregular practitioner accomplishes; what it is he really does when he claims that "he is putting a bone back in place." It is clear that unless we believe in the occult, there must be some fairly simple explanation, and it is not, I think, far to seek. He forces joint movement; he breaks down adhesions; and, if he is successful, restores the normal range. Any medical man can do the same thing, as well or better. It is not essential to be ignorant of anatomy in order to be able to put a joint through its full range, although it is necessary to be ignorant of both anatomy and physiology if one is to say with conviction that a small bone is "out" in a wrist or an ankle which is the site of pain caused by adhesions.

The position was admirably summarized by Sir Robert Jones when, in his Cavendish Lecture, he said:

> "Let me emphasize the statement that there is nothing which the manipulator does which cannot be more safely undertaken by any practitioner who possesses a knowledge of the pathology and elementary anatomy of the joints. Let it be fully realized that there are no hidden or mystic rites in the art of bone-setting."

Adhesions

The direct effect of the injury—the tearing of fibres in the ligament or joint capsule—is an outpouring of blood and lymph about the site of the tear, followed by organization of the clot, and the formation of fibrous tissue. The fibrous tissue may form a band anchoring certain folds in the capsule or preventing normal mobility of the joint. The diminution of range may be great, as shown commonly in a shoulder which is stiff as the result of enforced rest following a dislocation, or it may be small as in the inferior radio-ulnar joint or the wrist. When the patient uses such a joint and attempts to perform an ordinary everyday action, the result is pain and a feeling of weakness, or, in a weight-bearing joint, of insecurity, because of the pull on this adventitious band.

The differential diagnosis between a joint stiff as the result of inflammation and one stiff as the result of limiting adhesions is often easy but sometimes difficult. The most useful clinical test is one which we owe to Robert Jones, who used to teach that a joint stiff because of inflammation had limitation of movement in all directions, but that adhesions limited movement in certain directions only.

Adhesions limit movement very commonly, and may give rise to considerable pain and disability even when the excursion of the joint is almost, but not quite, full. It is not uncommon to see a patient complaining of disability of the knee, and on examination to make out full mobility, except that external rotation in flexion is just limited and gives rise to pain. Any gross loss of movement is easy to see, but we must bear in mind that very slight limitation caused by an adventitious band, an adhesion, may cripple the patient. Indeed, we may fail to make out any loss of movement, any diminution in the normal range, in a joint which fails to recover following injury. If we can exclude disease, inflammatory or neoplastic, and the skiagram is normal, it often repays us, empirically, to move such a joint through its full range under anaesthesia. With a clear history I should not hesitate to advise or practise manipulation, even though I could not be sure that movement was limited. One may well break down an adhesion in a joint in which the diminished range was too small to be detected with certainty on clinical examination.

The principles, then, on which we rely in undertaking the treatment of the chronic sprain are:

1. To overcome limitation of movement by forcing movement, either gradually by exercises and repeated forcible manipulation up to the patient's tolerance, or by forcible manipulation under anaesthesia.

2. To build up the musculature. It is true that active exercise is the greatest stimulus to the building up of muscle, but it is here again that the treatment by graduated faradic stimulation is of great service.

When one member of a group of muscles—for example, vastus internus—is markedly atrophied, there is no exercise that I know which rebuilds it, makes it catch up with the remaining members of the quadriceps group, so well as graduated exercise electrically provoked. The same is true in the adductor strains, caused by small tears in the muscle, the so-called " riders' strain." In the early stages it is far easier and the result is obtained more rapidly by this electrical method than by exercises. In the later stages of recovery active exercise against resistance supplements and then supplants the electrical method.

Technique of Breaking Down Adhesions

This technique, which has been given the grand name " manipulative surgery," is easily acquired. The bone-setter of the old days, who had to work without anaesthesia, developed a technique for overcoming the resistance of the antagonistic muscles and catching them off their guard. He combined rotation with the movements of flexion and extension. Hutton used to say: " The twist is the thing." But the practitioner has no need to possess any superlative or supernatural skill. Under anaesthesia he can put any joint through its full range, and, remembering that the range differs in different individuals, he can always compare it with that of the sound joint of the opposite side. Experience is of value, as, indeed, it is in all treatment, but it is not beyond the power of the ordinary doctor to acquire a working knowledge of the technique.

After-Treatment

The necessary after-treatment is to keep the parts moving, to restore function, and to prevent the re-formation of the limiting bands. The treatment conforms to that advised for the acute sprain, but the co-operation of the patient is needed. He must be encouraged to try and use the joint, assisted by the masseuse. Faradic stimulation is again a most useful part of treatment ; some of us consider it an essential part.

Chronic Sprains Complicated by Sepsis or Disordered Body Chemistry

It is a fact that sprains and allied injuries in the young adult or the adolescent tend to recover more quickly than similar injuries in later life. There is, then, a second factor to bear in mind besides the injury. If a sprain in a man of 40 fails to get well we should be on the look out for a predisposing cause—for example, sepsis or disordered metabolism. There may be some apical infection about the root of a dead tooth, a septic tonsil, or there may be some chronic constipation or failure of elimination which is playing a part.

The physician should bear this in mind and examine the patient, and not focus his attention only on the injured joint. The knee which will stand ordinary use but shows signs of irritation on over-use is an instance, and, although not truly to be classed as a chronic strain, becomes painful and remains painful as the result of active use, and the trouble not infrequently clears up on removal of the underlying cause.

Sprains of Muscle and Muscle Attachments

There are certain occupational injuries which are classed as chronic sprains. The so-called " tennis-elbow " is one ; this is an example of the over-use of a muscle group, and some tearing or periostitis about the attachment of the tendon into its bony insertion. The tearing of fibres in the adductors of the thigh, either in the substance of the muscle or at its attachment to the pubic ramus—the so-called riders' strain—and the tearing of fibres in the calf of the leg—erroneously described as a ruptured plantaris, but in fact caused probably by the rupture of some of the deep fibres of the soleus—are others. It is worthy of mention that the plantaris tendon is usually found intact when we are called upon to operate for suture of a ruptured tendo Achillis, so that it is unlikely that it ruptures in the lesser injury. The detailed methods used in the treatment of these injuries of muscle will vary, but the same underlying principles will guide us in our efforts to restore function.

Conclusion

In conclusion, I would urge that these minor injuries should be given a rather more prominent place than they at present occupy in the teaching of the medical student. An effort is being made in certain directions and in some medical schools to improve the teaching on fractures, and it would be wise if we could improve our teaching on the handling of sprains and allied injuries of muscles and joints at the same time. I know how fully occupied the medical student is, how his time is taken up, and how intensive the course has become, but still I would urge that we must attend to his teaching in these simple injuries, and must insist on his having some idea of what is being done in the physical treatment departments. He does not need to be a skilled masseur, but he should know something of massage and its possibilities for good and harm that he may know when it is to be advised. He should at least see the electrical methods in use, that he may know what we are talking of when we speak of faradic stimulation of muscles. He should realize the value of a properly applied bandage ; he should appreciate that a supporting bandage to assist in stabilizing a wrist should be put on round the joint itself, and not half-way up the forearm ; and that for a sprained ankle the bandage must include the heel.

It is by attention, or lack of it, to diagnosis and treatment in these minor injuries that many reputations have been made or lost.

Nosokomeion is the official organ of the International Hospital Association, and is published quarterly by W. Kohlhammer of Stuttgart (annual subscription R.M. 12, plus postage). It is of special value to all who are interested in hospitals, and the international character of its contents allows a comparative view to be taken on all branches of hospital activities. The articles are printed in English, French, or German, and are individually summarized in each language. No. 1 for 1934 was a special number on the small hospital of 100 to 300 beds, and contained eleven articles, of which the following are representative: G. von Deschwanden, " Was muss der leitende Arzt eines mittelgrossen Krankenhauses wissen? " ; Raphael Jackson, " The Possibilities for Administration, Management, and Accounting of the Smaller and Rural Hospitals " ; Ernst Balser, " The Small Hospital of the Future capable of being Enlarged " ; Gustav Birch-Lindgren, " Some Points of View on Small Hospitals " ; and Marcel Labbé, " L'Organisation du Service de Diététique dans un Hôpital de 300 Lits." No. 2 contained the programme of the Fourth International Hospital Congress, to be held in Rome in May, 1935, and reports from national hospital associations and representatives of twelve nations. Other interesting articles were: B. Albert, " Fehler im Krankenhausbau " and E. M. Bluestone, " On Medical Organization in Hospitals." No. 3 contains eleven papers from this year's international post-graduate course on hospital technique, including: P. Manz, " Organisation, Technik und Einrichtung im Krankenhaus " ; A. Rollier, " L'Organisation de la Cure de Travail dans la Clinique manufacture internationale de Leysin " ; and Letitia Fairfield, " Ante-natal Care and Hospitals."

PATHOLOGY AND TREATMENT OF SPRAINS*

BY

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As it is customary to use the words strain and sprain somewhat indiscriminately, I would suggest that the word "strain" be used to denote injury to the muscle component of a joint, resulting from excessive stress, and "sprain" to denote injury to other structures of a joint as well as its muscles. A strain, therefore, may be defined as the state of a muscle the tissues of which have suffered damage because the normal strength of that muscle has not been sufficient to resist the stretching effect of the force at the moment of its application or because the fibres of the muscle have been taken unawares before they have had time to reach full contraction to resist the stress. A sprain may be defined as the state of a joint any of the structures of which, besides the muscles, have been injured as the result of a force applied to it. When the degree of violence is such that a muscle's power of contraction is overcome, the joint elements may sustain damage of varying degree; when the damage is limited to the muscle tissue alone a strain is produced, but when it extends to one or more of the component parts of a joint, other than the muscle, a sprain results.

How an Acute Sprain Is Caused

In considering injuries to joints which produce sprains certain mechanical features should be borne in mind. So far as the protection of a joint is concerned, there is an instinctive vigilance on the part of the muscles, and this constitutes a joint's first line of defence. The other structures of the joint cannot be injured unless this line of defence gives way from: (1) the stress applied to the muscles protecting the joint being powerful enough to overcome their power of resistance; (2) the muscles having been taken unawares at the moment of the application of the stress; (3) fatigue having slowed up the normal rate of the muscle's contractility; (4) loss of tone from previous injury or disease limiting the capacity of the muscles for quick reaction to a sudden increase in their tension.

In this way an acute sprain is produced, the effects of which and the time necessary for recovery vary in accordance with the extent of the injury to the tissues and the particular structures damaged. In cases in which the brunt of the strain and the main damage are chiefly referable to the muscles and the injury to other joint structures is only slight, the sprain may be looked upon justifiably as a slight acute one. While this is true, however, the result of the injury may not be so slight as it seems, and the condition is all too frequently neglected by the patient as regards treatment. This slight sprain may become serious, because the muscles lose their tone and undergo a varying amount of wasting, and the consequent loss of efficiency, which becomes greater as time goes on, ends in the joint becoming less able to perform its function efficiently and quickly, and therefore liable to further injury from causes which would be quite harmless were the muscles in their normal alert state.

In the severe forms of acute sprain one structure of a joint may suffer to a greater extent than others, but all may become affected to a more or less degree, either at the moment of the accident or following on the changes consequent to repair, so that structures not directly affected at the time of the accident frequently become seriously implicated later.

To visualize clearly the possible results of an excessive stress applied to a joint it is worth recalling the main functions of each structure. The bones are mainly supporting, and are the levers upon which the muscles act; the ligaments aid in holding the ends of the bones together and limit their range of movement. The synovial membrane, by its secretion, helps to lessen the friction of movement and renders movement smooth; the cartilage lining the ends of the bones acts as a shock absorber.

Functional Importance of the Areolar Tissue

Filling up the interspaces round all the other structures, and carrying the arteries, arterioles, capillaries, veins, lymphatics, and nerves, is a most important joint structure—namely, the delicate areolar connective tissue. Damage to this tissue and its contained important structures is, owing to its situation and delicate nature, of frequent occurrence, and in my opinion is one of the main causes of continued loss of function of a joint after even a most trifling injury, and particularly when such injury is treated by prolonged rest. It is a somewhat soft substance possessing normally great tenacity and elasticity, and abundantly distributed throughout the body; by reason of the intercommunication of the areolar spaces effusion into this tissue is capable of travelling a long way from the seat of injury.

Areolar tissue, with its contained important structures, everywhere fills up crevices and spaces in the joints, and acts as padding between muscle groups and muscle fibres; in situations where free and easy movements are required the fibres of the supporting areolar tissue are loosely arranged, and where firm binding of parts together is necessary the fibres are densely arranged. Areolar tissue normally contains a small quantity of a translucent lymph-like fluid, sufficient to keep it moist and supple, and I suggest that the absence or diminution of this fluid, as may happen after injury, may be one of the contributory causes of the characteristic creaking sensation which takes place on movement of joints in the later stages of trauma.

By its normal moistness and suppleness and by its tenacity and elasticity areolar tissue is enabled to accommodate itself easily to the widest range of movements of the joint. When areolar tissue becomes soaked in lymph which has become stagnant after injury, unless this lymph is quickly removed it undergoes hardening changes leading to organization and adhesions, and its response to movement becomes inflexible and less pliable, resulting in a feeling of stiffness in the joint. In course of time this is followed by adaptive shortening of muscles controlling the joint, owing to similar loss of pliability and elasticity in the connective tissue of the muscle sheaths.

An important factor, therefore, producing chronic stiffness of injured joints, even after slight sprains when there is no very evident structural damage and no demonstrable adhesions, is the malnutrition of the areolar tissue due to interstitial oedema. The condition is really the outcome of imperfect repair, and is one of the most prolific causes of persistent discomfort and dysfunction in joints; it is very largely contributed to by over-rest.

Rest in the Treatment of Sprains

The advocacy of rest as the principal treatment of sprained joints almost certainly originated from the natural tendency of the possessor of a sprained joint volitionally to place that joint in the position of greatest ease, and on this fact the principle that pain is Nature's cry for rest is based. But the direct result of trauma and the processes leading to repair is a great increase of internal pressure in the surrounding tissues, due to bleeding and pouring out of

* Read in opening a discussion in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

lymph, so that there is stretching and pressure on the tissues, particularly the nerve endings, and pain in injury is quite unavoidable. Pain, therefore, may be more truly described as the "cry of the injured tissues for active help." Limitation of movement of an injured joint is also encouraged by the increase of pain, which is due to the contracting muscles further increasing tension between the tissues, and it is this close association of pain and movement which, in the belief that the prevention of pain is essential to repair, produced the theory that all movement must be prevented. Hence treatment by rest became the recognized method.

The treatment by rest is only palliative, as it certainly relieves pain, but surely this is a small matter when the disastrous consequences are realized. Rest tends to diminish circulation; absorption is not sufficiently stimulated, and the various structures become stretched by the long-continued tension. They remain relaxed for a long time, and, when organization follows, muscles, tendons, and areolar tissue become matted together, causing varying degrees of stiffness and limitation of movement. Circulation of the blood and lymph becomes further interfered with by compression of the blood and lymph vessels, due to intercellular tension. Muscular wasting from disuse and other causes takes place rapidly after injury, and so further complicates joint activity.

When a joint has been injured, no matter to what degree the structures are damaged, the keynote of recovery is the rate of absorption of effusion and the completeness of the absorption, and it is mainly upon these two factors that the question of the ultimate sequel to the injury depends. Incomplete recovery causes a degree of impairment, which may extend from a feeling of slight weakness in the joint and a sensation of untrustworthiness to limitation of movements to any extent. Even if the result of an injury falls mainly on one structure of a joint, prolonged rest may cause any or all of the other structures to become affected. It is chiefly from this fact that even a slight sprain, if rested for too long a period, may develop into a serious injury likely to produce secondary complications, which, for a long time and even permanently, may interfere with the perfect function of the joint.

The Value of Muscle Action

As rest physiologically tends to reduce the rate and amount of circulating blood and lymph through any part, while, on the other hand, the physiological changes called into play by muscular action promote a very active circulation of blood and lymph, not only to the muscles themselves, but to all the neighbouring tissues, I submit that muscle action, as a means of assisting the natural processes of repair after injury, has not received the attention it deserves. Muscle is a highly sensitive structure, with power instantly to respond to a variety of stimuli when in a state of health; when for any reason it loses its tone wasting follows rapidly. The loss of tone and the loss of power fully and rapidly to contract is of obvious importance to the security of a joint, and no joint can be considered to have recovered completely from injury to any of its structures until the tone and contractility of its musculature have been successfully restored to normal.

Although the restoration of muscle function is of such importance the muscle condition passes too often almost unnoticed, in spite of the fact that a joint may be crippled for long periods owing to the faulty nutrition of the other structures as the immediate result of atrophy of muscles and the mechanical disability. Even when a muscle is not obviously wasted, loss of tone *alone* produces a partial loss of function, and it becomes incapable of full contraction, its time rate of contraction becomes slower, and its efficiency to act synchronously with others in group action is diminished; thus the joint upon which it acts has its balanced action altered and the nutrition of its structures interfered with. The muscles which oppose wasted ones also suffer and further upset the balance of the joint because of the loss of the normal pull of the wasted and atonic muscles, and in time they become shortened from contraction of their fibres and interstitial tissue.

The interference with "muscle sense" which occurs when muscles are wasted upsets the power of the latter to carry out co-ordinated movements, and in consequence joint structures have to submit to harmful stresses, which would normally be countered by muscles in a state of fitness.

Such imperfect recovery of muscles following sprains of joints is so often met with that it would appear to be due to a general misunderstanding of the importance of the muscle changes, and a want of comprehension of the serious late results of these changes on the other structures of the joint if repair and full recovery of muscle function are delayed or incomplete. As a consequence of these muscle changes many chronic sprained joints, particularly of the knee and shoulder, come to be looked upon by the patient as the natural end-result of an injury and to be expected, whereas the disability, which may be slight or serious, is due to mechanical unbalance, and is easily curable.

The physical and chemical phenomena coincident with the normal activity of muscles are essential to their efficiency and sensation of well-being, and to maintain muscle in a healthy state the regular normal fulfilment of the functions of the arterial, venous, and lymphatic circulations is essential; this is even more so when tissues are injured. The benefit derived from the physiological changes consequent on painless muscular action, produced either naturally or by the correct type of electrical stimulation, cannot be too strongly stressed, and if painless muscular movements are instituted as soon as possible after a sprain the distressing complications leading to a chronic sprained joint with all its pain and disability can be prevented.

Effects of Treatment by Muscle Stimulation

Briefly summarized the effects of the treatment of injured muscles and joints by correct electrical muscle stimulation, which produces graduated and controlled contractions and relaxation, are:

1. Muscle elasticity, irritability, contractility, and tonicity are rapidly restored to normal.
2. A great increase of blood to the muscles and to the neighbouring tissues is produced, with all the attendant beneficial consequences.
3. Waste tissue products are rapidly cleared away and stagnation of lymph, with all its serious sequelae, is prevented.
4. A large supply of oxygen and nourishment is brought to the damaged part.
5. Rapid absorption of fluid and extravasated blood is actively promoted.
6. Beneficial chemical and physical changes following muscle activity take place.
7. The movements of muscles and tendons do not allow organization of lymph between their surfaces, and adhesions are thus prevented.
8. As the movements prevent stagnation of lymph in the areolar tissue in the joint interspaces, the danger of the areolar tissue losing its suppleness, pliability, and flexibility is diminished.
9. If, in later stages, adhesions have formed, the adherent surfaces are gently but effectively torn apart, by causing increasingly powerful contractions of the muscles separately.
10. Muscles are prevented from losing their tone and from wasting; muscles already wasted increase in bulk.

It should be noted that a recently injured and painful muscle can still be made to contract and relax, and the

degree of the contractions and relaxations can be so controlled that the origin and insertion of the muscle need not be approximated until desired ; consequently, the beneficial physiological changes called into activity by muscle action are produced with the minimal amount of strain of its fibres, and the movements of the injured joint as a whole can be kept within minimal range. If treatment is based on these principles no uncomplicated acute sprain should become a chronic one.

ARSENIC IN ITS RELATION TO THE KERATIN TISSUES

BY

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The keratin tissues, hair, nails, and skin, are of considerable importance in connexion with arsenic poisoning from a physiological as well as from a medico-legal point of view. In many of the published cases the presence and distribution of arsenic in these tissues has been of major significance in the investigation, and it seemed worth while, therefore, to obtain further experimental information on certain points concerning the effects of arsenic on the keratin tissues.

It is obvious that a knowledge of the mechanism of arsenic fixation in hair may give an important insight into the body's defence against the poison, and that examination of hair in certain cases of arsenical poisoning may be expected to yield information of great value. From the medico-legal aspect it would seem that the finding of arsenic in the hair would be strong evidence of its administration ; but before the analyses may be so interpreted it is necessary to inquire into a number of other possibilities. For example, is it possible for hair to absorb arsenic from fluid bathing the shaft ; or does any arsenic present necessarily come from the body fluids bathing the hair root? The importance of such a question may be illustrated by reference to one or two cases.

In the Seddon case the victim died about fourteen days after the first dose of arsenic, and this element was found not only in the proximal parts (3 mg. per 100 grams hair), but also in the distal parts of the hair (2 mg. per 100 grams hair), which was about twelve inches long. The presence of arsenic in the distal three inches raised the presumption that arsenic had been administered more than a year before death. Willcox suggested, however, that the arsenic in the distal ends might have been absorbed from the blood-stained body fluid which had come into contact with the hair, and by *in vitro* experiment proved that this explanation was possible. *Per contra*, in the Hearn case, the presence of arsenic in the hair of Miss Everard was interpreted as indicating the administration of arsenic over a considerable period, whereas it may well have been due to contamination from water which had soaked into the coffin after percolation through the arsenic-containing soil. Thus from similar facts we have opposite deductions made on behalf of the Crown, and both to the disadvantage of the accused.

It is well known that arsenic may be found in the hair after all traces of it have disappeared from other organs of the body, but it is desirable to ascertain whether the quantity found indicates a preferential absorption of arsenic by the keratin tissues or merely a trapping of arsenic in the non-vascular tissues. It seems further of interest to ascertain whether, if there is preferential absorption, it is a function of living pre-keratin tissues or whether keratin itself absorbs arsenic preferentially *in vitro*. It is also desirable to know if this absorption is due to chemical combination between arsenic and certain products of cellular activity, or if it is a case of simple absorption. Other problems include those of ascertaining whether or not arsenic can travel along the hair shaft ; whether it is possible to ascertain from the distribution of the poison if it has been absorbed from the body or if it has resulted from external contamination ; and whether any inferences of value can be drawn from the amount and distribution of arsenic as to the time when a dose of arsenic was administered, and the size of the dose. We are still able to answer very few of these questions, and the present paper must be looked upon as a preliminary report.

Preferential Absorption

If we consider the results of a series of cases dealt with in the report of the Royal Commission on Arsenic Poisoning (1904) we find that the keratin tissues do take up more arsenic, weight for weight, than the other tissues of the body. For example, a number of individuals were given 5 mg. of arsenic per day for two months ; on examination the hair of these men was found to contain from 2 to 5 mg. of arsenic per 100 grams of hair. The total quantity of arsenic taken by each individual was approximately 300 mg., and if this amount, without allowing for excretion (which would account for the greater part of it), be supposed to be equally distributed over the body the concentration would be about 0.5 mg. per 100 grams of body weight—that is, about one-tenth of the quantity actually found in the hair. Similar figures can be shown for the nails and to a lesser extent for the skin.

(A) BY HAIR REMOVED FROM THE BODY

It is known, as has been mentioned, that hair soaked in an arsenical solution absorbs arsenic, but it is evidently desirable to place this observation on a quantitative basis and to ascertain whether, under such conditions, the hair can attain to, or surpass, the concentration of arsenic in the surrounding fluid. For this purpose a series of tubes were set up each containing 0.5 gram of hair or nail clippings and 10 c.cm. of a solution of sodium arsenite containing 0.01 mg. of arsenic per c.cm. The liquid was decanted from each at definite intervals, and an aliquot was analysed by the Marsh process. The hair in each case was removed and washed with six portions of water, and allowed to drain thoroughly after each washing. The organic matter was destroyed by the method of Wood-Smith[1] of boiling with equal parts of concentrated nitric and concentrated sulphuric acids. After complete removal of nitric acid the liquid was made up to a known volume, of which an aliquot was boiled with 0.5 gram of potassium metabisulphite to remove the last traces of nitric acid and reduce arsenate to arsenite. Arsenic was then determined by the electrolytic Marsh apparatus. The results of one typical experiment of the series are shown in Table I, where the density of human hair is taken as unity. Since, however, part of the absorbed arsenic might conceivably be due to swelling of the hair, a known weight of hair (0.3036 gram) was allowed to soak in water for seventy-two hours ; at the end of this time it was removed and dried as thoroughly as possible with filter paper in the same way as the arsenic-containing hair (it still felt damp to the touch). The increase in weight was 0.0221 gram, or 7.3 per cent. When this hair was allowed to stand in

the balance case for half an hour the increase fell to 0.0040 gram, or 1.3 per cent. In other words, there was no simple imbibition of the fluid surrounding the hair, and the figures of Table I represent a true absorption of arsenic.

Table I

Length of Time of Soaking	Concentration of Arsenic in the Hair	Concentration of Arsenic Left in the Solution	Percentage of Arsenic Recovered
	mg. per c.cm.	mg. per c.cm.	
0 hours	0.00	0.010	
20 ,,	0.024	0.009	102
44 ,,	0.03	0.008	95
118 ,,	0.05	0.007	95
145 ,,	0.05	0.008	105
234 ,,	0.05	0.007	95

It is to be observed that the hair absorbs arsenic in increasing amounts, gradually attaining a concentration of arsenic about seven times that of the surrounding solution. Evidently, too, the final concentration is greater than the usual figure hitherto reported ; it is unaltered by increasing the time of soaking above seventy-two hours ; and generally, it is not increased when the hair is soaked in a stronger solution of arsenite. In the cases given in the Royal Commission Report, the level of arsenic in the hair runs fairly uniformly at about 2 to 3 mg. per 100 grams hair, not only in those cases where small doses have been given over a long period but also in those where the hair has been examined long periods after a single dose.

Table II

Quoted by	Reference	Mg. Arsenic per 100 grams Hair	Notes
Casper-Liman	*Gericht Med.*, 8th ed., ii, 378	2.0	—
Brouardel ...	*Ann. d'Hyg.*, 1899, xxii, 137	1.0 2.5	Subacute
Knecht and Deardin	*Lancet*, 1901, i, 854	1.0 3.0 3.0	Chronic
Heffter ...	*Arch. Inter. Pharm.*, 1905, xv, 399	1.0	59th day after one dose of about 1 gram
Althausen and Gunther	*Journ. Amer. Med. Assoc.*, 1929, 2002	1.5 2.7 1.8 (beard)	2.5 months after a single dose 3.5 ,, ,, 3.5 ,, ,,
Royal Commission Report on Arsenical Poisoning, 1904, 3.6		3.0 3.0 3.0 1.85 1.5 1.5 0.75 0.75 0.30	2 months after dose ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,,
Bannister ...	*British Medical Journal*, 1920, ii, 476	5.0	4 days after inhalation of arsine
Seddon case...	—	Proximal—3.0 Distal —0.2	Probably 13 days from the first dose
Armstrong case	—	0.45	Probably 8 days from the first dose
Hearn case: Mrs. Thomas	—	0.7	17 days after the first dose
Miss Everard	—	1.5 in. from scalp— 2.3 1.5 in. ,, mid.le—1.5 1.5 in. ,, distal— 1.0	Suggested 7 months from the first dose

In all the published cases of arsenic poisoning in which the hair has been analysed the level of arsenic concentration runs about the same figure. (Table II.)

(B) BY NAILS REMOVED FROM THE BODY

In the case of nails the original weight of 0.330 gram increased by 38.2 per cent. after 144 hours' soaking. After standing three hours in the balance case, this increase was reduced to 17.6 per cent. Before soaking in arsenic solution the nails were scraped as free as possible from adhering skin, and before analysis the liquid was removed by filtration and thorough washing with distilled water. Results obtained are shown in Table III, where the density of human nail is taken to be 1.2. The last column represents the concentration of arsenic in the nails corrected for uptake of the medium on the assumption that 0.5 gram of nail takes up 0.19 c.cm. of the solution (that is, 0.0019 mg. of arsenic and 38 per cent. of its volume of the solution).

Table III

Length of Time of Soaking	Concentration of Arsenic in the Nails	Concentration of Arsenic left in the Solution	Percentage of Arsenic Recovered	Concentration of Arsenic in the Nails (corr.)
	mg. per c.cm.	mg. per c.cm.		mg. per c.cm.
0 hours	0.000	0.010	—	0.000
67 ,,	0.084	0.007	105	0.079
93 ,,	0.084	0.006	95	0.079
116 ,,	0.107	0.007	115	0.103
188 ,,	0.192	0.0018	98	0.185

It is a remarkable fact that nails in arsenical solution can take up arsenic to a concentration of about 100 times the final concentration of the surrounding solution, and in our experiments had not even then reached the maximum.

Evidently both nails and hair removed from the body and soaked in a solution containing arsenic (as sodium arsenite) can absorb that element until the concentration is far in excess of that of the surrounding medium. In other words, they exhibit preferential absorption. That this absorption is not merely a case of surface adsorption is shown by the fact that when hair is soaked in sodium arsenite solution, as in the above experiments, none of the arsenic is removed by thorough washing with dilute caustic soda before analysis. The importance of this observation can hardly be exaggerated, for it has been customary to consider a higher concentration of arsenic in the keratin tissues than in the viscera as proof that the arsenic was absorbed by those tissues during life ; that assumption is proved to be false.

Absorption from the Living Body

Under the conditions of our experiments the arsenic is evenly distributed along the length of the hair, but if arsenic is being absorbed into growing hair or nails from living body fluids, a different distribution is to be expected. At first arsenic should be found only in the proximal end. As the hair grows either an arsenic-containing band grows with it (in the case of the poison being administered over a short period) and is followed by an arsenic-free proximal zone, or, in the case of long-continued administration or continued presence of arsenic in the blood owing to slow excretion, more and more of the hair contains arsenic until, eventually, through cutting or falling, the distribution becomes uniform.

In the majority of cases of poisoning one would expect to find more arsenic in the proximal end of the hair than in the distal, but, of course, for a variety of reasons, this distribution is not absolute. For one thing, the relative lengths of the arsenic-containing and arsenic-free parts will vary from case to case with the time of administration of the poison, the rate and amount of excretion in the vomitus, urine, and faeces, the rate of growth of the hair, and the time and frequency of hair-cutting. Moreover, as Willcox has pointed out, " sweat and sebaceous secretion contain arsenic, and as the whole length of the hair comes in contact with these secretions, the limitation of arsenic to the proximal portions of the hair is relative,

not absolute." However, in cases of absorption *in vivo* some such distribution may generally be expected, and the finding of more arsenic in the proximal parts than in the distal is strong evidence that the arsenic has been absorbed from body fluids—*provided it can be shown that no external contamination can account for it.* The expectation of a non-uniform distribution of arsenic in hair is in any case dependent on the supposition that the arsenic, once absorbed into the hair, remains fixed and can neither travel along the shaft nor be reabsorbed by the body, and experiments to justify this supposition have hitherto been lacking.

Methods of Absorption Determined

The following experiments were carried out *in vitro* to determine whether or not arsenic is capable of travelling along a hair fibre. A lock of human hair about 10 cm. long was placed so that the cut ends dipped to the extent of about 4 cm. into a solution of sodium arsenite containing 0.1 mg. of arsenic per c.cm. This solution was contained in a test tube and the hair was arranged round a tightly fitting cork so that 5 cm. of it was completely out of contact with the fluid. Within twenty-four hours it was observed that the hair above the stopper was damp for a length of 2 cm. It was allowed to stand thus for three weeks, and at the end of that period the hair projecting above the stopper was divided into five sections, and these were analysed without previous washing. The results of the analyses are shown in Table IV.

Table IV

Weight of the Section	Total Amount of Arsenic Present	Notes
0.144 gram	0.5 mg.	Section nearest the solution. Very wet
0.122 ,,	0.15 mg.	Hair damp
0.104 ,,	Trace	Slightly moist in one part
0.100 ,,	Nil	Hair quite dry
0.067 ,,	Nil	Section farthest from the solution. Dry

Two important points emerge from these results. First, the hair not immersed in the liquid but wetted with it by capillary action actually contains more arsenic than the hair in contact with the solution. This is due to evaporation of the arsenical fluid on the hair fibre. Secondly, local contamination at the proximal end has resulted in that gradual distribution which is to be expected if absorption takes place from the body fluids. But it is evident that it may equally occur after death if by any chance the hair is soaked in an arsenical solution at the proximal end only.

In order to prevent the solution travelling up the outside of the fibre, the experiments were repeated with a thin layer of paraffin wax laid round the top of the cork. The hair was allowed to stand for three weeks in a solution containing 0.1 mg. of arsenic per c.cm. No moisture was visible outside the tube and the volume of the solution did not apparently diminish ; 3 cm. of the hair (weighing 0.164 gram) nearest the liquid contained no arsenic.

The experiments indicate beyond doubt that local wetting of the hair shaft with arsenite solution causes arsenic to be absorbed over a length of hair by "creeping" of the solution and absorption from outside. They show equally definitely that travel of the arsenic along the inside of the fibres does not take place, and that, therefore, the graduated distribution of arsenic is legitimately to be attributed to *in vivo* absorption only if contamination from some external liquid source can definitely be excluded.

Reabsorption by the Body

They also suggest that arsenic once deposited in hair or nails is finally lost to the body—a suggestion which is *a priori* indicated by the fact that hair shafts, the keratin layers of epidermis, and so on, are really dead tissues, and are, indeed, excretions. However, there appears to be a division of opinion on the subject, for whereas Willcox states that "it is probable that during the prolonged administration of arsenic a certain amount becomes deposited in the skin, hair, and nails, and this is gradually reabsorbed, being excreted by the urine and faeces," Althausen and Gunther,[2] on the basis of a study of excretion of arsenic before and after treatment with sodium thiosulphate, have shown that arsenic is not reabsorbed from the hair,

In our early experiments the fact that we were able to rinse arsenic-soaked hair several times with water and even with dilute caustic soda without appreciable loss of arsenic suggested that reabsorption of arsenic from hair to the living body was at any rate a slow and difficult process. Quantitative experiments on this point, however, showed that arsenic-soaked hair containing the maximum of 5 mg. per 100 grams could lose part of the arsenic after prolonged soaking in distilled water. After fifteen days' soaking in this manner, the water being changed every twenty-four hours, about 40 per cent. of the arsenic had been removed. Further soaking would not remove the other 60 per cent. Furthermore, it was found that the arsenic could not be removed to any appreciable extent from the hair of a person who had been receiving arsenical injections. This suggests a method of differentiating between arsenic absorbed *in vivo* and arsenic derived from some external source of contamination.

Summary

It has been shown that keratin tissues when soaked in arsenical solution exhibit the phenomenon of preferential absorption. The arsenic so absorbed can be partly removed by very prolonged soaking in distilled water, but rapid rinsing either with water or dilute alkali does not affect the arsenic content in any marked degree. By this method the maximum arsenic content of hair is found to be 5 mg. per 100 grams, and much higher values can be obtained in the case of nails. *In vitro* experiments have shown that arsenic can travel along a hair fibre only if "creeping" of the solution along the outside of the hair be possible. It has been demonstrated that arsenic absorbed into hair *in vivo* cannot be removed by prolonged soaking, and this fact is tentatively put forward as a basis for a method of distinguishing between arsenic absorbed *in vivo* and arsenic resulting from external contamination.

The expenses of the work were partly defrayed by a grant from the Moray Fund of this University.

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[1] Wood-Smith: Royal Commission Report (1904), ii, 351.
[2] Althausen and Gunther: *Journ. Amer. Med. Assoc.*, 1929, 2002.

The *Transactions* of the Twentieth Annual Conference of the National Association for the Prevention of Tuberculosis have now been published. This conference was held last June, and was reported at the time in these columns. It was largely concerned with reviewing the progress made in the twenty-one years of the life of the National Association, and this volume of *Transactions* has consequently a definite historical interest. The National tuberculosis scheme is discussed from various points of view, and a comprehensive survey of the present position is thus given. The main trends in further development are indicated.

FATAL PERFORATION OF THE CAECUM IN A CASE OF SPRUE

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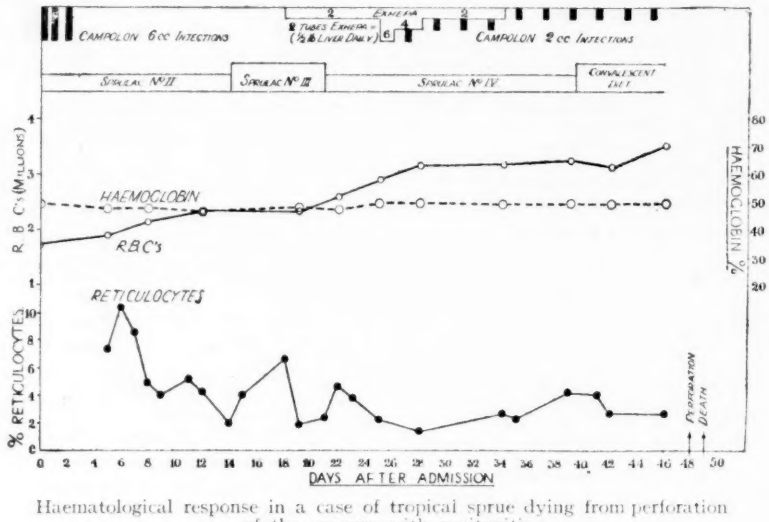
Cases of perforation of the intestine in sprue are extremely rare, and those so far reported have been associated with ulcers in the small bowel. Faber (1904) reported a case of death from peritonitis following rupture of an ulcer in the small intestine. At necropsy sixteen small ulcers were found at various parts of the lesser bowel, but the large intestine was free. Fischer and von Hecker (1922) reported several small ulcers in the lower jejunum and ileum, and Mackie and Fairley (1929) described a superficial healing ulcer in one of their cases about half an inch in diameter, located two inches above the ileo-caecal valve. In two cases reported by Manson-Bahr (1924) perforation had occurred. One of these—a case of ten months' duration—showed a large ulcer in the ileum six feet from the ileo-caecal valve opposite the mesenteric attachment; it measured one inch in diameter, and had perforated in two places, producing a fatal peritonitis. In the other case twelve ulcers varying in size from 0.5 to 1 c.cm. were found in the ileum, the mucosa of which was acutely inflamed. One small ulcer 3 mm. in diameter was found in the upper part of the jejunum; multiple perforations had resulted in peritonitis and death. The present case is of special interest because no evidence of ulcers in the small or large bowel was found at necropsy, and the perforation involved the caecum. An epitomized history is recorded below.



Haematological response in a case of tropical sprue dying from perforation of the caecum with peritonitis.

Case Record

Mrs. S., aged 58 years, was admitted to the Hospital for Tropical Diseases on February 28th, 1934, seriously ill with tropical sprue.

Past History.—Born in England, she had gone to India in 1900, and had remained there until 1926, since when she had not been out of this country. There was a history of malaria in 1901, and of dysentery, without recurrence, in 1902.

Recent History.—The onset of the immediate trouble occurred in September, 1925, when the patient began to have large, pale, frothy stools and flatulence, having lost much weight. These symptoms persisted, and she returned to England in March, 1926. The tongue was then sore with ulcers and fissures, and intestinal symptoms were marked. In 1927 she received three months' treatment with milk diet and temporarily improved. Then in November, 1930, she became definitely worse, receiving treatment including injections of liver extract over a period of six months without any great benefit; subsequently she returned home, improving up to a certain point. By June, 1933, she had begun to lose weight; the stools were bad, flatulence marked, and the tongue sore; in July an anal fissure developed. Since Christmas vomiting occurred infrequently and she had lost 3 stone 9 lb. in weight. Attacks of tetany had also been present for a considerable period, the last being about a fortnight before admission. The stools were pale, sometimes formed and sometimes fluid; flatulence was severe; and she could not retain solid food, vomiting it almost immediately.

Physical Examination (February 28th).—Inspection revealed a thin, elderly, much emaciated woman with pale mucous membranes and conjunctivae. She was edentulous; the tongue was smooth and pale with hyperaemic edges. She was very weak on admission, and a grave prognosis was given. There was an apical systolic murmur, but no cardiac enlargement, and the breath sounds, though harsh, were normal. Abdominal distension was present, the muscles were atonic and wasted, and peristaltic movements were visible through the thinned abdominal parietes. Some tenderness was noted on deep pressure over the appendix area. An anal fissure was found on the posterior aspect of the sphincter, and above this the rectum felt ballooned.

Laboratory Records (March 1st).—Red blood counts, 1,700,000 per c.mm.; haemoglobin, 50 per cent. (Haldane); colour index, 1.3; average diameter of corpuscle, 8.6 μ (halometer). The blood picture was typical of megalocytic anaemia; megalocytes were numerous; anisocytosis and poikilocytosis were marked; normoblasts were scanty. Biochemical examinations were postponed until March 5th, when the serum calcium was 8.7 mg. per 100 c.cm., the serum phosphorus 2.5 mg. per 100 c.cm.; and the glucose tolerance curve showed a maximal rise of 54 mg. per 100 c.cm. one and a half hours after the administration of 50 grams of glucose.

Progress Notes.—The case ran an apyrexial course with normal pulse rate and respirations until the terminal crisis with sudden perforation and peritonitis. A high protein, low fat, low carbohydrate dietary in the form of "sprulac" introduced by Fairley in 1932 was used, and initially three injections of campolon (each 6 c.cm.) were given; a submaximal reticulocytosis of 10.4 per cent. (see Graph) occurred on the sixth day, and subsequently fluctuations in the counts occurred throughout the course of the disease, the percentage, however, always remaining above the normal. Though there was improvement in the alimentary features of the case, looseness of the bowels persisted, and there was but little gain in weight; though the red corpuscles showed some increase in numbers the haemoglobin percentage remained stationary (see Graph). Analysis of the stools on March 16th showed: total fat, 19.2 per cent.; neutral fat, 2.6 per cent.; fatty acids, 16.6 per cent.

On March 19th the patient was put on two tubes of "exhepa" daily (equivalent to ½ lb. whole liver), and this later was increased; daily injections of campolon (2 c.cm.) were also given, as indicated in the Graph. Again an appreciable increase in the red cells occurred, but the haemoglobin showed no improvement. A convalescent mixed diet was allowed on April 9th, and though the patient was troubled with flatulence she put on 2 lb. in weight, and progressed satisfactorily during the next week. The red cells also increased, and on April 16th the count showed red blood cells, 3,585,000 per c.mm.; haemoglobin, 50 per cent.; colour index, 0.7; average diameter of corpuscle, 8 μ; megalocytes, microcytes, anisocytosis, and poilkilocytosis still present.

On April 18th, at 5.15 p.m., the patient complained of a sudden severe abdominal pain, and vomited copiously. She was in great pain, lying with the knees drawn up, and exhibited a greyish pallor and drawn facies. The abdomen was very distended, definitely rigid, and pressure increased the pain. Perforation with peritonitis was diagnosed, and Mr. A. H. McIndoe did an immediate laparotomy.

Operation.—There was a gush of gas and faecal fluid when the peritoneum was incised, a diffuse generalized peritonitis with ileus being found. A small circular hole about 1.5 cm. in diameter was found posteriorly, situated at the junction of a mobile caecum and ascending colon some two and a half inches above the base of the appendix. The bowel wall was very thin in the vicinity, but no ulcer or growth was palpated.

Necropsy.—The caecum and adjacent ascending colon were distended and thinned, and a circular hole was found in the bowel as indicated above. There was no induration or thickening around the perforation, and no signs of surrounding inflammation suggesting that perforation had occurred at the site of a former ulcer. A vein draining the area was thrombosed. Further details of the necropsy will be published separately later.

Comment

Though the patient had definitely improved as a result of treatment and the red corpuscles had increased by 1,885,000 per c.mm., the haemoglobin failed to increase in the way the vast majority of sprue cases do. The patient, as already stated, was very weak on admission, and it appears probable that venous thrombosis in a thinned and over-distended bowel led to sudden bursting of a devitalized area of the caecal wall. In the light of subsequent happenings it would probably have been better if the convalescent diet had been of higher protein and lower carbohydrate composition. Iron therapy was withheld for fear of irritating the bowel and increasing the diarrhoea.

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The Christchurch Hospital, New Zealand, publishes a review of the work of the radium and deep therapy departments between 1924 and 1934, which has been compiled by Dr. P. Clennell Fenwick, F.R.C.S.Ed., who is in charge of the departments in question. In his introductory note he states that "during the last nine years every request for additional equipment has been granted at once, and we are now so well equipped that we are able to carry out the same methods of treatment that are in use in Europe and in America." In May, 1930, a special consultation clinic was organized, which meets weekly and is composed of all members of the honorary and departmental staff. Each patient is examined by the members, and re-examinations are made at regular intervals. Carefully worked out recording and "follow-up" systems are in routine use. The consultation clinic has been found to be especially useful in the case of persons who ask for examination under the impression that they have cancer; and the united assurance of an expert committee that such is not the case has done much not only to render the persons happier but to encourage people to come for advice. Since 1930 the clinic has examined 785 new patients, while the total attendances for examination and re-examination have been 2,004. Brief descriptions are given of the methods of treatment employed, together with summaries of the results obtained. There are also useful notes of the after-care of cancer patients and upon the mental aspect in carcinoma. A useful series of precautions to be observed in treatment appears at the close of the report.

Clinical Memoranda

TORSION OF HYDATID OF MORGAGNI SIMULATING ACUTE APPENDICITIS

The following case seems to merit report as illustrating one of the more uncommon conditions which may present the clinical picture of acute appendicitis.

A well-developed girl of 16 years was seen about five hours after the onset of abdominal pain, at first generalized, but later localized in the right iliac fossa, accompanied by vomiting. Temperature, 99°; pulse, 96. There was diminution of abdominal movement, some rigidity in the lower right quadrant, and tenderness just below McBurney's point. A fairly definite diagnosis of acute appendicitis was made. An hour later the abdomen was opened by Davis's incision: a considerable amount of sero-sanguineous fluid escaped from the abdomen. The appendix, which showed injection of its peritoneal coat, was removed. As the condition of the appendix seemed incompatible with such an amount of bloody fluid the pelvis was explored. The right ovary was polycystic. The uterus and left appendages were in all respects normal. The two right hydatids of Morgagni were larger than normal, and presented pedicles about 1.5 cm. long: the uppermost one resembled a ripe cherry in size and appearance. It was tense, and its pedicle was twisted on itself through 1½ turns in a counter-clockwise direction. The pedicle was ligated and the strangulated hydatid removed. The other hydatid was also removed, as the occurrence of a similar mishap seemed not unlikely in view of the abnormal length of its pedicle. A wedge-resection of the right ovary was done. The abdomen was closed without drainage. Convalescence was uneventful.

The points of interest in this case are: (1) the accurate simulation of acute appendicitis, and (2) the large amount of fluid poured out in six hours from a small strangulation.

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MYOIDEMA

Myoidema is a physical sign which seems to have been almost forgotten, as it is not mentioned in some of the recent textbooks of medicine, and is not known to the younger generation of doctors. It is a localized contraction of wasting muscle, produced by a sharp tap, and is most often seen in cases of pulmonary tuberculosis. It is readily obtained by striking the pectoralis over the second and third ribs with the end of the middle finger, as if percussing rather forcibly. In all cases where the tuberculosis is active a small lump of muscle will at once arise at the stricken point and quickly disappear. It may be seen in other diseases where there is loss of flesh with febrile temperature. One condition is, so far as I know, peculiar to pulmonary tuberculosis, and that is, the presence of myoidema on one side of the chest only; this happens when there is active disease at one apex, and that slight. In the more advanced cases there is often a difference on the two sides as to the readiness of myoidema to appear, the more ready contraction being produced on the more diseased side. In acute cases it can be got in every muscle of the body. A very fair estimate of the rate of progress of the disease at the time is given by this phenomenon—the more readily it is produced the more acute the case, and, if it cannot be obtained, the tuberculosis is quiescent.

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Reviews

THE CLINICAL SIGNIFICANCE OF THE ELECTROCARDIOGRAM

Experimental researches and clinical studies during the past five years have enlarged and, to some extent, modified the clinical significance of the electrocardiogram. The new (third) edition of Dr. Harold Pardee's *Clinical Aspects of the Electrocardiogram*[1] presents a full and balanced picture of modern conceptions. Earlier chapters are devoted to the common abnormalities and a consideration of the limits of the normal. It is customary at the present time to regard an electrocardiogram as normal when it shows none of the irregularities of rhythm or complex which are known to denote functional or pathological changes in the heart. It cannot be doubted that the great mass of normal electrocardiograms contain groups of less obvious deformities, perhaps representing pathological changes, but more likely related to dysfunction of endocrine and metabolic mechanisms in or controlling the heart. These have yet to be differentiated, and may constitute some of the new matter that will appear in further editions of Dr. Pardee's monograph.

In the present volume the new knowledge of localization of myocardial damage, bundle-branch block, and premature contractions is discussed and the modern views justified. There have been those who have discounted the value of instrumental methods in clinical medicine ; it has been assumed by some that electrocardiography is employed as a short cut to prognosis. No orthodox physician would make such a contention, and Dr. Pardee has epitomized the matter as follows: "The only thing that can be discussed about the prognostic importance of the electrocardiogram is the part which it may contribute to the prognosis"—namely, by indicating the extent of the structural changes in the myocardium. The volume contains seventy-four illustrations, the reproductions of electrocardiograms being adequate, but not outstandingly good. The text is full and readable, its authority is unquestionable, and the monograph will prove highly valuable to clinicians, and particularly to cardiologists.

INFANTILE ECZEMA

That baffling disease, eczema of infancy, is the subject of an interesting monograph,[2] by Dr. Péhu and Dr. Aulagnier, both of Lyons. Although for long the subject of intensive study, it cannot be said that much is yet known either as to its real nature or that the treatment of the condition is in any way satisfactory. The authors have recapitulated thoroughly enough the various views held on the vexed questions associated with the subject, including its aetiology, and finally side themselves with those who are content to explain so many things by the employment of the blessed word "allergy." The exact signification of this very popular term still remains obscure. According to some it is merely a synonym for general hypersensitiveness to environment, while others limit it to the liability to the production of toxic symptoms from the action of various proteins. In the case of infantile eczema most authors lay the blame on different articles of diet, especially upon milk, the staple food of infancy, but some indict the egg albumen consumed by the mother during the pre-natal life of the patient. At one time it was thought that eczema seldom or never occurred in breast-fed infants, but it seems that the incidence of the complaint is almost the same in these as in those who are bottle babies. In any case it is never wise to wean prematurely a breast-fed baby with the idea of benefiting the eczema. Toxins produced in the alimentary canal have also often been cited as an aetiological factor, but well-nourished infants with no symptoms of digestive trouble are usually much better if their alimentary systems are allowed to remain undisturbed by unnecessary medicines.

Our authors in their discussion of the important but difficult subject of treatment relegate local measures to a secondary place, but they are sufficiently wise to warn against the employment of any irritating application, which is only too prone to cause an exacerbation of the condition. Their primary object in treatment is to remove the allergic susceptibility of the patient, and for this purpose they find that the best method is the employment of vaccinotherapy in the shape of injections of an enterococcic vaccine. They appear not to aim at a specific desensitization, but at an alteration of the reactive tendencies of the patient—an object very much akin to the purpose proposed by the advocates of "protein shock." Among other matters, the authors devote considerable space to the discussion of sudden death in infantile eczema—that is to say, death occurring within a few hours in an infant previously healthy except for the presence of the eczematous eruption, and in which post-mortem examination discloses no sufficient cause. These tragedies, fortunately rare, they regard as examples of anaphylactic shock, supporting their contention by a comparison of the microscopic changes found in the central nervous system in such cases with those found in animals which have been the subjects of experimental anaphylaxis. It is a singular thing that these cases, rare enough in France, seem practically unknown in this country ; we cannot remember one being published for many years. In conclusion we may say that this monograph is worthy of perusal by all dermatologists and paediatrists.

SEXUAL AND REPRODUCTIVE PHYSIOLOGY

Among the branches of medical science in which new knowledge is so rapidly multiplying few, if any, have been so prolific in hypotheses and potentialities as endocrinology, and in particular the *Recent Advances in Sex and Reproductive Physiology*,[3] on which Dr. J. M. Robson of the active Institute of Genetics of the University of Edinburgh has provided a comprehensive summary. This review is obviously valuable at a time when published researches are constantly appearing, sometimes discordant and even confusing from the introduction of new names for the same hormone. The endocrine interdependence is complicated, and even now it is difficult to decide whether all the described hormones have a separate existence or whether the different reactions reported are due to variations in the conditions present in the reacting tissues.

As is well known, Zondek described two gonadotropic hormones, prolan A and prolan B, manufactured in the anterior lobe of the pituitary, and probably by the basophil cells, which control the hormone activities of the ovary. Subsequently Wiesner of the Edinburgh Institute of Genetics set forth a similar scheme under the name of the Rho factors. That the anterior pituitary provides a gonadotropic hormone there appears to be general agreement, but considerable doubt has been expressed, for example, by Collip and Dodds, about the separate exist-

[1] *Clinical Aspects of the Electrocardiogram, including the Cardiac Arrhythmias.* By Harold E. B. Pardee, M.D. Third edition, revised. New York: Paul B. Hoeber, Inc. 1933. (Pp. 295 ; 74 figures. 5.50 dollars.)

[2] *L'Eczéma du Nourrisson.* Par Dr. M. Péhu et Dr. R. Aulagnier. Paris: Gauthier-Villars. 1934. (Pp. 174. 25 fr.)

[3] *Recent Advances in Sex and Reproductive Physiology.* By J. M. Robson, M.D., B.Sc. With an Introduction by Professor F. A. E. Crew, M.D., D.Sc. London: J. and A. Churchill. 1934. (Pp. ix + 249 ; 47 figures. 12s. 6d.)

ence of two—prolan A and B. Dr. Robson, who gives a wide review of the whole subject, concludes, from the evidence of different types of urine and of various pituitary preparations, that there apparently are two gonadotropic hormones. Another disputed point is whether or not there is a definite increase of eosinophil or other kind of cells in the anterior pituitary in pregnancy ; the author quotes an observation to the effect that there is a preponderance of acidophil cells ; but it may be noted that Rasmussen, from a long series of histological examinations, does not recognize the existence of what have been called the pregnancy cells.

The question of a gonadotropic hormone secreted by the human placenta is discussed and left open. Although there are admittedly some reasons for the suggestion that the foetus produces a hormone influencing the course of pregnancy, the author concludes that there is not any convincing proof of this.

ULTRA-VIOLET THERAPY IN EYE DISEASE

For some years there has been a physico-therapeutic department at Moorfields Eye Hospital—recently under the charge of Mr. Frank Law, who has compiled a review of the action of this and other forms of radiant energy under the title of *Ultra-Violet Therapy in Eye Disease*.[4] Full details of the type of radiant energy employed are dealt with in an introductory chapter. Ultra-violet light is used in treatment of disease of the eye in two ways: in general phototherapy, as a means of increasing the patient's general resistance and recuperative power ; and in local phototherapy, by virtue of its local biological action upon the tissues. The potency of such light in its effect on the eye was shown by Birch-Hirschfeld and Duke-Elder. There was a definite abiotic reaction following exposure to the short unfiltered ultra-violet rays. The cornea swelled in all its parts, there was a cellular infiltration, and, if severe, the lesion might extend to the production of opacity. The lens might be similarly damaged, even to a tendency to the formation of cataract. There is also some evidence that the retina may suffer injury, and it is obvious that unskilled use of these rays may be highly injurious to the sight. In Mr. Law's work some 225 cases come under review, mainly those treated in 1932, and special pains were taken to secure a proper follow-up. The largest number of cases comprised those commonly associated with the appearance of phlyctenules either on the conjunctiva or on the cornea. In weighing the value of the results Mr. Law confesses himself less enthusiastic than previous workers. He points out that besides the use of the rays there are other factors in the treatment—the cleansing of the eye by a skilled nursing staff, and, not least, the mere exposure to the air of the bodies of children, and the removal of clothes that are often actually sewn on! Nevertheless, he is convinced that there is a benefit derived in cases of blepharitis, phlyctenular disease, and conjunctivitis in children ; diseases that are due to bad condition, debility, lack of nourishment, or even lack of cleanliness. This finding is strengthened by the observation that poor results were achieved in such cases as syphilitic iridocyclitis and tuberculous disease. General phototherapy is an adjunct in treatment—in many cases a useful adjunct—so that the sooner it is begun the better the chance of performing its part in expediting recovery. There is a section on the use of radium. The types of rays and the means of control adopted at the Radium Institute are described. It is held that the claims made for the therapeutic value of radium in ophthalmic conditions, especially in America, are too diverse and too enthusiastic, but that it is of proved value in the treatment of epibulbar and orbital neoplasms, as also in the treatment of spring catarrh. There are no indications that it will supersede present methods of treatment of trachoma and senile cataract. The book includes also a chapter on the therapeutic use of x rays, wherein, on balance, the dangers seem to outweigh the advantages ; and a chapter on the use of infra-red rays, which serve no therapeutic purpose in ophthalmology, and, in fact, offer definite dangers.

[4] *Ultra-Violet Therapy in Eye Disease. With a Review of the Action of Other Forms of Radiant Energy.* By Frank W. Law, M.A., M.D., B.Chir., F.R.C.S. Foreword by Sir Stewart Duke-Elder, M.A., D.Sc., M.D., Ph.D., F.R.C.S. London: John Murray. 1934. (Pp. 78. 5s. net.)

ACUTE AURAL INFECTIONS

In *Acute Otitis and Mastoiditis in General Practice*[5] Mr. N. Asherson has made a determined attempt to produce a book which may help the practitioner, faced as he often is by the puzzling phenomena occurring in acute inflammatory conditions of the ear. Had the author been able to convey to his readers in clear, concise language the fruits of his experience, which is evidently wide, he might truly have been very helpful. Quite early in the book, however, in giving directions to the practitioner for so simple a matter as syringing, he says, " The nozzle of the syringe is inserted *into* and along the floor of the meatus," the italics being the author's. If this be the method which a practitioner should adopt perhaps it explains why many patients still prefer to visit an aural surgeon when the ears require syringing. Again, we read: " The tip of the mastoid process is subcutaneous, and its anterior, lateral, and posterior parts are palpable, but the actual tip itself is buried in the uppermost fibres of the sternomastoid muscle." Such loose writing makes every sentence suspect, and there is hardly a page on which some obscurity or ambiguity is not to be found. On page 160 it is stated that after an operation for acute mastoid the average period before the patient is fit for normal routine is six weeks, and on page 276 the average period is given as three months. When he reads that the mastoid antrum holds only a drachm of pus at the most the reader will wonder what the author really means. Spelling mistakes are not infrequent, but perhaps " Wylde's " incision conceals a delicate gesture which the father of Oscar would not have appreciated. If the author had submitted his book to independent and drastic revision good use could have been made of his excellent material.

BLOOD LYMPH AND IMMUNITY

Investigations of normal and pathological body processes are apt to be made in different institutions and published in different journals. It is therefore a great help to workers in both fields if a summary of the present state of knowledge in both directions is collected in one volume. This is attempted in the Treatise on Physiology, Normal and Pathological,[6] edited by Professors Roger and Binet, The second edition of the volume of this treatise, which deals with blood lymph and immunity reactions, has recently appeared. The 730 pages cover a very wide range, including, for example, the chemical constituents of the blood, blood transfusion, and immunity reactions.

The book is divided into sections on various subjects by different authors. These sections are of very unequal quality. That dealing with the chemical constituents of the blood (Professor Laudet) is concise and nearly as

[5] *Acute Otitis and Mastoiditis in General Practice. A Manual for Practitioners and Students.* By N. Asherson, M.A., M.B., B.S., F.R.C.S. London: H. K. Lewis and Co. Ltd. 1934. (Pp. 317 ; 97 figures, 12 in colour. 10s. 6d. net.)

[6] *Traité de Physiologie, normale et pathologique.* Tome vii, *Sang et Lymphe Reactions d'Immunité.* Publiée sous la direction de Professeur G. H. Roger et Professeur Léon Binet. Deuxième édition. By various authors. Paris: Masson et Cie. 1934. (Pp. 730 ; illustrated. Broché 100 fr., relié 120 fr.)

complete as is possible in sixty-eight pages, although practically nothing is said about the reaction of the blood. There is a thorough discussion of the coagulation of the blood by Professor Zunz. On the other hand, Professor Achard gives a vague and verbose discussion of theories of oedema, in which he does not appear to distinguish between osmotic pressure and hydration of proteins. Had he cleared his ideas and included more of the known facts (as, for example, those of Moore and van Slyke bearing on the relation of oedema to plasma proteins) he could have presented far more information in fewer pages. The single page given to the pathological physiology of blood platelets is most inadequate. Anaemias and leukaemias are not included. The section on respiratory pigments in invertebrates is very brief, while that on coagulation of the blood in invertebrates occupies less than a full page. The section on immunity, by Professor Bordet, is masterly, as far as it goes, but makes little mention of the great volume of work carried out in the last ten or so years. It entirely omits the work done by Landsteiner's school on the relation of specificity to chemical structure. In the section on anaphylaxis, by Professor Besredka, considerable attention is paid to the practical aspects of the subject. This is all to the good, for it maintains interest and counteracts a too academic outlook. But it appears inadvisable in a work of this nature to include a purely practical section on blood transfusion, particularly at the expense of other important matter.

In such a treatise full references are essential in order that the reader may be able to form his own opinion on the work which the author quotes and to look up details that the author has omitted. No references are given in some sections; in others the bibliography is most incomplete. In all the sections little work is quoted except that published in French journals. There is no index.

Notes on Books

An Introduction to Pharmacology and Therapeutics,[7] by Professor J. A. Gunn, was first published in 1929, but has already reached a fourth edition. The continued demand for this book is proof that there is a widely felt need for some short and simple exposition of the scientific facts which form the basis of rational therapy. The author modestly attributes the success of his book to a revival of interest in the treatment of disease, but its popularity is chiefly due to the fact that, while it is concise, it is also readable and accurate.

[7] *An Introduction to Pharmacology and Therapeutics*. By J. A. Gunn, M.A., M.D. Fourth edition. London: H. Milford, Oxford University Press. 1934. (Pp. 237. 5s. net.)

Murrell's handbook *What to Do in Cases of Poisoning*[8] has now reached its fourteenth edition, and for the last three Dr. Philip Hamill has been responsible. The edition under review has been carefully revised, and many new poisons have been added. We find, for example, accounts of dinitrophenol intoxication, the use of strychnine in barbiturate poisoning, and antimony poisoning from enamel-ware glaze. The long-continued popularity of this pocket volume is the best proof of its merits. We suggest, however, that its utility might be increased by a somewhat fuller account of the commonest causes of poisoning, such as coal gas and lysol.

The first volume of the forty-fourth series of *International Clinics*[9] is divided into four parts, devoted respectively to original articles on medicine, surgery, and paediatrics, and reviews of recent progress in medicine and surgery. The section on medicine contains instructive papers by Noel Fiessinger of Paris on hepatic insufficiency, by Lay Martin of Baltimore on jaundice, by Tinsley R. Harrison of Baltimore on enlargement of the heart, by William S. Lowe of Baltimore on so-called functional heart disease, by G. L. W. Gorham and K. E. Crounse of Albany on recent advances in the treatment of cardiac and renal oedema, by Henry M. Moses on the management of old-age conditions, and by Samuel Weiss and Vera L. Coles on the role of the vegetative nervous system in gastro-intestinal diseases. The section on surgery contains an interesting paper by I. A. Bigges and William B. Porter of Richmond, Va., with a record of seven personal cases and a review of the literature. The sections on paediatrics consist of a symposium on lead poisoning in its various aspects, including its occurrence in children, by H. B. Cushing and H. S. Mitchell, *x*-ray diagnosis by H. E. Childe, its biochemical aspects by I. M. Rabinowitch, the pathology by Lawrence J. Rhea, and treatment by S. G. Ross, all of Montreal. Recent progress in medicine is discussed by A. Cantarow of Philadelphia, and in abdominal surgery by Donald C. Balfour and James R. Watson of Rochester, Minnesota.

The British Social Hygiene Council (Carteret House, London, S.W.1) has published a thirty-four-page booklet entitled *Health Notes for Young Men Overseas*, which provides suitable information on venereal diseases, etc., intended for young employees of tea, rubber, and other firms going to the East. It has been prepared by Dr. T. Drummond Shiels on the lines of the Ross Institute booklet on malaria, and can be obtained for 4d. Up to 25 per cent. of free copies are offered to firms placing an order for these booklets.

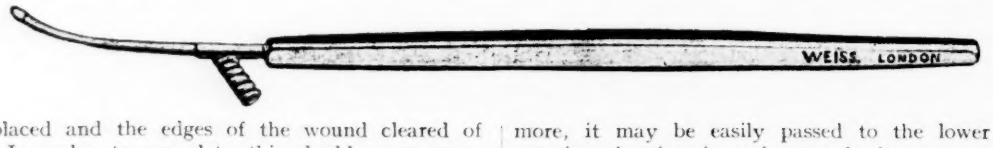
[8] *What to Do in Cases of Poisoning*. Edited by P. Hamill, M.D., D.Sc., F.R.C.P. Fourteenth edition. London: H. K. Lewis and Co. Ltd. 1934. (Pp. viii + 204. 5s. net.)

[9] *International Clinics*. Vol. i, forty-fourth series, 1934. Edited by Louis Hamman, M.D. Philadelphia, Montreal, and London: J. B. Lippincott Company. 1934. (Four volumes quarterly. 50s.)

Preparations and Appliances

IRRIGATING REPOSITOR FOR CATARACT EXTRACTION

Mr. B. W. Rycroft, F.R.C.S. (London, W.), writes: During the operation of cataract extraction it is frequently necessary to irrigate the anterior chamber in order to remove residual lens cortex after the nucleus has been extracted. Thereafter the iris is replaced and the edges of the wound cleared of capsule, etc. In order to complete this double manœuvre by a single instrument an irrigating repositor has been constructed, and has proved satisfactory in practice.



The instrument (shown in the accompanying figure) consists of a fine bone hollow tube of silver tapered to a narrow point, and slightly curved on the flat. This is mounted on a handle, to which is fitted a small nozzle for attachment of a rubber tube, around which the whole shaft is balanced. The diameter of the tube is little more than that of an ordinary iris repositor, and can be inserted between the lips of the corneal section without causing the wound to gape. Furthermore, it may be easily passed to the lower limits of the anterior chamber in order to obtain a reverse flow and to dislodge stubborn masses of lens cortex. The rate of flow is controlled by either hand.

The instrument is constructed by John Weiss and Co., Oxford Street, London, W.

MANCHESTER MEDICAL SOCIETY CENTENARY

BY

E. M. BROCKBANK, M.D.

Manchester has been, is, and will be celebrating centenary anniversaries of important societies in the conception of all of which the medical profession had been more or less active. Last year the Statistical Society, the first of its kind in England, reached its hundred years of existence. One of its first four founders was Dr. James Phillips Kay, afterwards Sir James Kay-Shuttleworth (1804–77), a baronetcy being awarded for his national services to education. Presidents of the society were Dr. John Roberton (1844–7), Dr. Daniel Noble (1859–61), and Dr. James Niven (1905–7). I had the honour of giving the society an account of "A Medical Statistician of a Century and a Half Ago" (Dr. Thomas Percival) during its historical celebrations. This year the Manchester Medical Society became a centenarian on October 1st; and next year the Manchester Athenaeum—practically a similar institution, but for the commercial man in the street—reaches a similar age. In a *History of the Manchester Medical Society* it is suggested that the idea of both our own society and of the Athenaeum was conceived, and preliminary steps for their formation taken, by one man—John Walker—a surgeon of the town. As much as is known of Walker is recorded in the *History* of the society which has been prepared for the centenary. Before 1834 there was no medical library available for general reference, and no society confined to members of the profession at which medical questions could be ventilated.

From 1782 to 1834

The Manchester Literary and Philosophical Society was conceived and really brought into being in 1782 by Dr. Thomas Percival of medical ethics fame, with the forceful assistance of Thomas Henry, F.R.S., apothecary to the Manchester Infirmary—that is, a general practitioner of the day—and the Rev. Thomas Barnes, Unitarian minister of the town. This society was mainly run by the profession for thirty or more years, half of the offices—presidents, treasurers, secretaries—being filled by our forebears. In its early days the doctors read papers before it, but they were mainly of general interest, and any member of the society could attend its meetings. The only method in which professional matters could then be discussed seemed to be by the public press, in pamphlets, and even in octavo volumes of considerable size. Our forefathers of the day were no milk-and-water controversialists; ink was no use to them—gall apparently flowed more naturally from their quill pens. The most important controversy of those times was over the justifiability of the Caesarean section operation, which Dr. John Hull defended against the scathing comments of William Simmons, backed up by Dr. John Ferriar. Then Charles White drew down the sneers of Ferriar upon his method of describing the anatomical distribution of the swelling in phlegmasia alba dolens puerperarum. All in public too, and no doubt spicy material for the general readers.

A Hundred Years of Achievement

In spite of the evident need for one, there was no attempt to found a purely medical society until 1833, when a meeting was held and a decision made to canvass the practitioners of the district on the question. Two energetic young persons—John Walker and Joseph Peel Catlow—undertook this, and the result was the foundation next year of a society with the object of providing a library and reading room and place for meetings for discussing medical topics. Dr. John Hull, then the doyen of the profession, was elected first president.

The history of the society, with its ups and downs, hard work by some members, indifference by others, financial struggles, is probably that of other societies: but one outstanding feature was the acquisition of a very extensive and valuable library through the efforts of Thomas Windsor, an ophthalmic surgeon of distinction in his day. For fifteen years he bought many thousands of second-hand books from home and abroad. Among them were some dozen incunabula, many examples of fine printing from the leading Continental presses, anatomical plates, biographical dictionaries, sets of periodicals—indeed, anything that might be of value for reference or research. So much was spent on these books that the committee got restive, and the end was Windsor's withdrawal from his library activities and transference of his help to Dr. Billings's library of the United States Surgeon-General at Washington.

The actual hundred years of achievement was reached on October 1st, on which date an exhibition of books, portraits, curios, and other objects bearing on the medical history of the town was opened in the new Central Library of the city, where it will remain for general inspection until October 20th. The president of the society for the year, Dr. E. Bosdin Leech, gave an address on October 3rd, the first Wednesday in the month, on which ordinary meetings of the society have invariably been held from October 1st, 1834. His subject was "Some Picturesque Episodes of Manchester Medical History." Before the address Dr. Leech presented, for the honorary membership of the society, the Earl of Crawford and Balcarres, Chancellor of the University, Sir Walter Moberly, Vice-Chancellor, Mr. Walter Cobbett, Chairman of the Board of Trustees of the Manchester Royal Infirmary, Percy Winstanley Hull, grandson of Dr. John Hull, the society's first president, Dr. J. M. Bligh, President of the Liverpool Medical Institution, and Professor J. A. Nixon of Bristol, who is to address the society next month on "Licence to Practise and Liberty to Teach Medicine in the English Provinces." A dinner followed on the same evening, at which many distinguished visitors were present. On Sunday, October 7th, there was a special service in the Cathedral, the preacher being the Right Reverend Cecil Wilson, Bishop of Middleton.

The Commemorative Exhibition

The exhibition is in the large hall of the new Central Library of the city, recently opened by the King, which has been designed for such a purpose. The display, mostly of objects illustrating the medical history of the town, is well worthy of the honour of being the first of its kind to appear in such a striking place. It is being visited daily, with great interest, by hundreds of the general public, for whom it was chiefly intended. The exhibits are disposed in handsome erect metal and glass cases, while for the larger articles and books horizontal cases are used. Of books there are samples of medical publications of the fifteenth and sixteenth centuries, from the most famous Continental presses, some in Greek characters. More modern books illustrate the writings of local doctors who have promoted the knowledge of medicine. Most of these exhibits are made more interesting by a portrait of the author displayed by the side of his book. Two cases contain books and pamphlets dealing with the vaccination controversy before 1816, and copies from burial registers of the town churches showing the ravages of small-pox, especially among children, of the period. One very interesting exhibit is a series of illustrations and portraits showing the growth of the Manchester Royal Infirmary from its foundation in 1752, and a group of its original large gallipots and poison bottles, the latter like large stone ginger-beer bottles of last century. Among other objects which attract attention is a carbolic acid spray, given by Lister to the late Mr. Edward Lund. The progress of the public health of the town is well illustrated by graphs, especially made for the purpose, with singular clarity of exposition.

A final note of personal interest is that the president for the centenary year is nephew of the late Dr. Daniel John Leech, professor of materia medica and therapeutics in the University of Manchester, who filled the same office in the jubilee of the society fifty years ago. Dr. D. J. Leech was keenly interested in the nitrite group, and was instrumental in having that very useful preparation liquor ethyl nitritis recognized in the official *Pharmacopoeia*, though it is no longer there.

LEWISHAM HOSPITAL EXTENSION

OPENING BY LORD DAWSON

A new ward block at Lewisham Hospital—one of the general hospitals of the London County Council—was opened on October 9th by Lord Dawson of Penn. The block consists of three wings, and comprises a maternity department with accommodation for sixty-three cases, a children's section with thirty-five cots, and two general wards containing sixty-six beds. The total additional accommodation provided in the extension is 164 beds. In the maternity unit the main wards are divided into three, and at the end is the babies' "crib ward," with toilet room. There are five labour rooms, a bathroom for new-born babies, and a room, specially heated and thermostatically controlled, for babies born prematurely. The children's section includes an admission bathroom, a milk room for the preparation of feeds and the sterilization of bottles, and a sun parlour. Glazed divisions between the sections give a less institutional appearance, and aid in the classification of patients. In addition to the ordinary examination lamps, there are plugs for use in connexion with *x*-ray examination by each bedside, and wireless earphone points for each patient. The new works, including equipment, are expected to cost £55,500, and will bring the total accommodation of the hospital, which had 5,655 in-patients last year, to 747.

The opening ceremony was largely attended by members and officers of the London County Council and by a number of consultants and specialists in its service. Mrs. Nellie Palmer, chairman of the Lewisham Hospital Committee, presided. Mr. Somerville Hastings, chairman of the Hospital and Medical Services Committee of the Council, in welcoming Lord Dawson, said that this new block was the biggest piece of constructive work that the Council had undertaken since it became responsible for municipal hospitals in 1930. It was believed, and hoped, that the wards were thoroughly up to date, and efficient in every way, and it was known how very necessary they were in a rapidly growing district. The available beds in connexion with L.C.C. hospitals were constantly being increased, and a few weeks' time another hospital would be taken over—namely, Heatherwood Hospital, with more than 100 beds, presented by the United Services Fund. Mr. Somerville Hastings pleaded for the development of after-care work, which must be of a voluntary nature, in connexion with the hospitals. He wanted to see efficient Samaritan committees formed at each institution.

Lord Dawson of Penn, who wore his gown as president of the Royal College of Physicians of London, said that he was present not only in his personal capacity, but as President of the College. The two Royal Colleges comprised in their Fellowship a large proportion of the members of staffs of the leading hospitals of the country, and had accumulated in the course of years a certain amount of knowledge and experience which they were only too anxious to place at the service of any forward movement which would improve hospital services in this country. He paid a tribute to Sir Frederick Menzies, the county medical officer of health, on whom, as the greatest medical administrator of our time, his College had conferred its honorary Fellowship. In addition to the vast amount of work imposed by the Local Government Act, 1929, there had fallen to Sir Frederick Menzies a very large share in the establishment of the Post-Graduate Hospital and School at Hammersmith, now approaching completion. Lord Dawson sketched the wide compass of the medical services of the L.C.C., and referred to the increasing co-operation with the voluntary hospitals. The L.C.C., with great wisdom, had associated its new hospitals with the right conception of teaching. One practical issue was the linkage of municipal hospitals for teaching purposes to the teaching hospitals of London. Passing to the building which he was to open, Lord Dawson said that it was a great pleasure to be in a building in which such fastidious care had been spent on details of construction—on the proper provision of light and air, and on the width and height of wards. He congratulated the hospital on the fact that it stood in more than ten acres of grounds. It was elementary foresight on the part of any hospital or clinic, private or public, to acquire more ground than it could immediately use, for no one could say in what large direction hospital construction might make progress during the next fifty years. He praised, also, the provision for maternity cases, which would help to make child-bearing safe. He hoped that in course of time all the municipal health services of the district would be located within the hospital, instead of being scattered at various centres. Finally, he stressed the need for a department of physico-therapy in connexion with all hospitals.

By means of a microphone Lord Dawson addressed a few words of encouragement to the patients, who were listening-in, and then he and the general company proceeded to inspect the block.

ROYAL MEDICAL BENEVOLENT FUND

Subscriptions and donations are very urgently needed in order that the activities of the Fund may be maintained. Legacies are needed to support the annuity department. Cheques should be made payable to the Honorary Treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, London, W.1.

The committee at a recent meeting voted seventy-two grants amounting to £1,513 10s. The following are particulars of three out of the many cases helped.

M.S., F.R.C.S., aged 58, married, with three children, aged 16, 14, and 12. Joined up for the war, and was in France from 1915 to 1917, when he retired on account of ill-health. Then followed a long period of locums, with a growing family to educate. Two years ago he started in a practice of his own. In July, 1934, the applicant was admitted to hospital, and had an operation for pyloric stenosis. It was found that he had suffered from a duodenal ulcer for some years. It was clear that this man had been struggling to build up a practice to support his family while seriously ill. He will require a long holiday after his discharge from hospital. He has no savings to meet this, nor for the support and maintenance of his family, and there are some pressing debts. The Fund has given immediate assistance of £30, and help has been obtained from other societies amounting to £157. Total charitable gifts, £187.

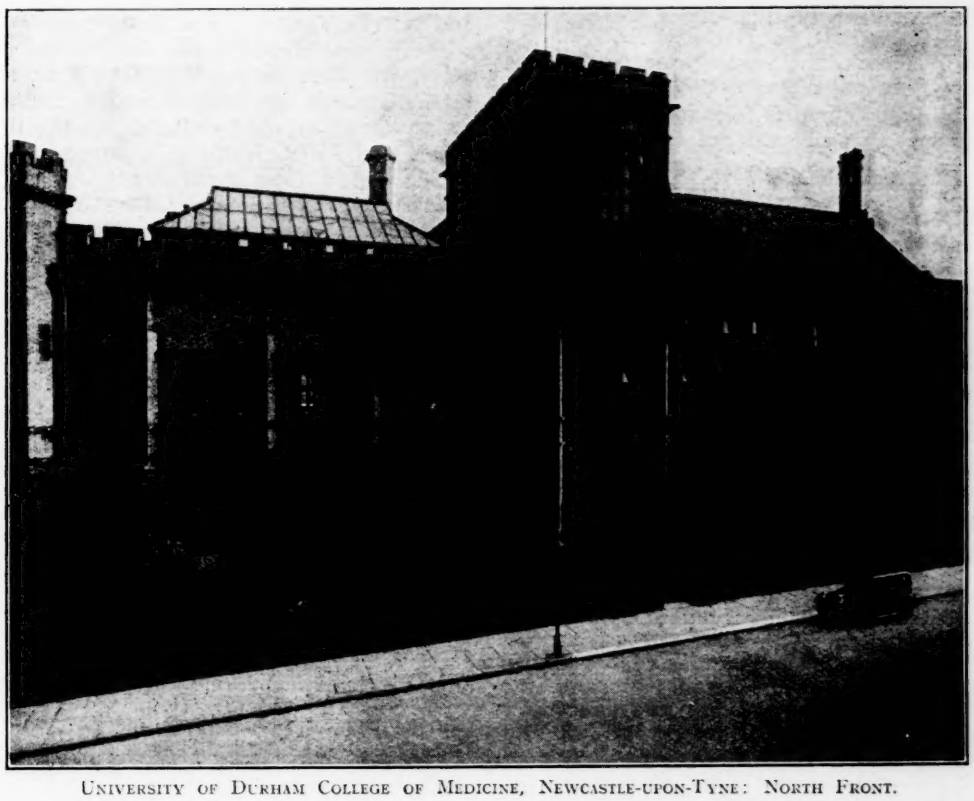
Widow of L.R.C.P. and L.M. The husband died suddenly in 1923 from heart disease. The widow, aged 30, was left inadequately provided for with three young children. She has sought employment, and has worked as nurse and housekeeper, but was recently dismissed owing to breakdown in health. The eldest daughter has now reached the age for employment, and is earning £83 per annum; the two younger are at school. The Fund and Ladies' Guild are assisting with grants amounting to £56. The total income available for food and household needs for this family is £167, which has also to meet children's extras at school, fares, and outfit, but excluding school fees.

Widow of L.R.C.P. and S. The husband died in 1931, leaving his widow, aged 46, with a family of five children. Fortunately three were able to earn and contribute £147 to their mother towards their own maintenance. The Fund gives a yearly grant of £26 and the Ladies' Guild £19 10s. Total income is £197 10s.; rent and rates, £58, leaving £139 for the maintenance and household needs of six persons.

CENTENARY OF THE UNIVERSITY OF DURHAM COLLEGE OF MEDICINE

CELEBRATIONS IN NEWCASTLE AND DURHAM

On October 4th and 5th the Newcastle School of Medicine celebrated the hundredth anniversary of its foundation. Coeval with the federal University of which it is one of the most flourishing units, it began its work in 1834 in a humble fashion. The present building, dating back to 1888, is the third home of the school, and plans are already far advanced for the erection of a new College in close proximity to the Royal Victoria Infirmary, since for some years the number of applicants for admission has considerably exceeded the capacity of the laboratory accommodation in several departments, and even continued duplication of classes has failed to meet the needs of students and permit all eligible candidates to enter the school. On Thursday, October 4th, the College was thrown open to visitors. The chief features of interest were historical exhibits by Professor Grey Turner, Dr. W. D. Arnison, and Mr. F. C. Pybus ; and demonstrations in the departments of anatomy, biology, physiology, chemistry, and pathology.



University of Durham College of Medicine, Newcastle-upon-Tyne: North Front.

Official Reception

The president, Sir Thomas Oliver, who has been associated with the College for fifty-five years since his appointment on the teaching staff in 1879, welcomed guests at the official reception in the evening. Congratulations were offered in person by the Presidents of the Royal College of Surgeons of England, the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, the Governor of the Apothecaries' Hall of Dublin, the President of the British College of Obstetricians and Gynaecologists, the Deans of the Faculties of Medicine of Aberdeen, Oxford, Leeds, and Sheffield, the Provost of the School of Medicine of the University of Wales ; whilst messages were received from other schools unable to send personal representatives, including a congratulatory cable from the Dean of the Faculty of New York. Dr. E. K. Le Fleming, Chairman of Council, personally represented the British Medical Association. The Chancellor of the University of Durham, Lord Londonderry, detained in London by urgent affairs, sent a message of congratulation and good wishes. The Visitor of the University, the Lord Bishop of Durham, and the chief officers of the sister colleges at Durham and Newcastle were present, together with the Lord Mayor of the city and a distinguished assemblage from the city and the counties of Northumberland and Durham. Among the many messages from old graduates unable to attend were notably those of Dr. Milner Moore (at the age of 95 years) and Dr. Alfred Cox. The scene in the Great Hall of the College was enlivened by the vivid colour of the academic costumes of graduates and the representative guests. Alternative attractions were provided in the way of a lantern lecture on the history of the College by Professor Grey Turner, an anatomical film demonstration by Professor Green and Dr. James Whillis, and a picturesque display of the local traditional sword-dancing by a team, whose age averaged 60 years, led by a veteran of 77 years. Later, guests and graduates and students danced till the early hours.

On Friday, October 5th, at Newcastle-upon-Tyne, old graduates, under the guidance of Dr. W. D. Arnison, visited the Old Infirmary, now manufacturers' premises, identifying where possible the scenes of their hospital life. Others visited the various hospitals associated with the school, the Bacteriological Department, and the Public Health Laboratories. Sir Francis Acland, Chairman of the Dental Board of the United Kingdom, and Sir Holburt Waring were among the visitors to the Sutherland Dental School of the College.

Convocation for Honorary Degrees

Guests were then transported by private cars and omnibuses to Durham, where in the Great Hall of the Castle luncheon was served to over two hundred guests, including the Chancellor, who had flown from London, the Visitor, the Vice-Chancellor, the Minister of Health, Sir Francis Acland, Sir Holburt Waring, Dame Janet Campbell, and Lieut.-General Hartigan, Director-General of the Army Medical Services.

A special convocation followed in the Chapter House of Durham Cathedral, with the Chancellor presiding, when honorary degrees were conferred. Sir Hilton Young, the Minister of Health, was presented by Sir Robert Bolam, and Sir Holburt Waring, P.R.C.S., by Professor Grey Turner, for the degree of D.C.L. Sir Francis Dyke Acland, Chairman of the Dental Board, was presented by Sir Thomas Oliver, and Dame Janet Campbell, M.D., by Professor Ranken Lyle, for the Degree of Doctor of Hygiene. Lieut.-General J. A. Hartigan, D.G.A.M.S., and Dr. Joseph W. Leech, M.P., were presented by Professor Grey Turner for the degree of Doctor of Surgery, and Dr. William Robinson of Sunderland for the same degree by Professor Thomas Beattie. Lastly, Dr. W. D. Arnison, joint author with Professor Grey Turner of a commemorative volume, *The Newcastle-upon-Tyne School of Medicine, 1834–1934*, was presented for the honorary M.A. by Professor C. E. Whiting. This handsome book, with abundant pictures,[1] forms an interesting memento for those who joined in the centenary proceedings; it is also a mine of information about the rise of a great medical school, with many biographical sidelights upon the leaders of the profession in Newcastle during the past hundred years.

[1] *The Newcastle-upon-Tyne School of Medicine, 1834–1934.* By G. Grey Turner, assisted by W. D. Arnison. Newcastle-upon-Tyne: Andrew Reid and Co., Ltd. 1934. (Pp. 221; illustrated. 10s. net.)

The Bishop's Address

The closing ceremony was a magnificent commemorative service in Durham Cathedral, at which the Visitor of the University, Dr. Hensley Henson, Bishop of Durham, gave an apt and inspiring address, thus rounding off the part he had played in a memorable occasion. "Perhaps we may distinguish," he said, "three main reasons why the College of Medicine, as it reviews the first complete century of its existence, may in its corporate capacity offer thanks to Almighty God. In the first place, there stands the continuance throughout the whole period of that settled civil order and complete liberty of thought and teaching which are indispensable conditions of scientific research and academic teaching. In the second place, you have to thank God for a succession of great teachers who have advanced medical and surgical science to its present amazing altitude. In the third place, you thank God for the continuing prosperity of the College. It has grown from small beginnings to a position of assured importance in the national system. Its students are found in every part of the Empire, exercising their noble and beneficent profession. In Newcastle itself the College has had to its hand a teaching instrument of the highest value in a famous hospital, which certainly takes a place among the greater hospitals of England."

THE LEAGUE AND TRAFFIC IN OPIUM

[From our Geneva Correspondent]

The Council of the League of Nations, on September 24th, received the voluminous report of the permanent Central Opium Board—a document containing over a hundred foolscap pages of statistics. The drug traffic may not be controlled, but it is certainly fully analysed. The representative of Poland, M. Beck, in presenting the report to the Council, drew attention to what he considered the most important conclusion, that while in 1932 there was a general decrease in the manufacture of the three main drugs—morphine, diacetylmorphine, and cocaine—in 1933 there was a considerable increase in the manufacture of the first (11.52 per cent.), and a slight increase in the manufacture of the second and third. There had been, however, a marked decrease in the reported world consumption of diacetylmorphine (10 per cent.), and a less marked decrease in that of cocaine (4 per cent.).

International Control of Narcotics

M. Beck said that it was gratifying to learn that certain Governments whose countries are producers and exporters of large quantities of raw opium, such as Turkey and Persia, are showing an ever-increasing spirit of collaboration, and endeavouring to conform more and more with the methods of the Board; but he regretted that the international control over the raw materials for the manufacture of cocaine was seriously hampered by the fact that certain countries, including some of the main producers of coca leaves, do not send in statistics. He added that the Board was justifiably concerned at the considerable increase in its duties and responsibilities resulting from the application of the convention of 1931 for the limitation of the manufacture and regulation of the distribution of narcotic drugs.

From the battalions of statistics presented in the report it appears that the manufacture of morphine and of cocaine is diminishing in Germany and France, and that of morphine is increasing somewhat in Belgium and Italy. In the United Kingdom the manufacture of morphine in 1933 was to the extent of 1,873 kilograms, comparing with 1,292 in 1932. The manufacture of cocaine in this country is also rising slightly, reaching 427 kg. in 1933, having increased every year since 1929, when it stood at 238 kg. The largest manufacturer of morphine last year was the United States (7,459 kg.), and the largest manufacturer of cocaine was Japan (920 kg.). The greater part of the morphine produced in all countries is used in the manufacture of substances not covered by the convention. Thus, in the United Kingdom, out of the 1,873 kg. manufactured last year 111 was used in the manufacture of diacetylmorphine, 848 in the manufacture of non-convention substances, and 914 kg. remained as morphine. Some very curious facts are elicited by a glance at these tables. For example, Latvia and Esthonia are the largest consumers of galenical preparations of Indian hemp, each using 17 kg. per million inhabitants, whereas the United Kingdom consumes 9 kg. per million and France only 2 kg. The largest consumer of cocaine is Japan (14 kg. per million inhabitants), and in Europe, apart from an enormous consumption in Iceland, which may be disregarded, the largest consumer is France (nearly 9 kg.), followed closely by Belgium, Austria, and Latvia. The consumption in the United Kingdom is just upon 5 kg. per million.

Morphine from Poppy Straw

In the discussion on dangerous drugs which took place in the Fifth Committee of the Assembly reference was made to the new Hungarian method of morphine extraction from poppy straw.[1] The Hungarian Government has the right to use this process, which enables it to assist the Hungarian peasants, and results in a reduction in the price of morphine. The representative of Poland said that his country also was interested in this new method, and would take it into consideration for the manufacture of codeine. If the process proved satisfactory from the economic standpoint it would be adopted, for it also carried advantages from the agricultural point of view. If several countries adopted the process smuggling would be reduced to zero, as every country would become quasi-independent of opium imports; on the other hand, correspondingly greater attention would have to be paid to internal supervision.

[1] *British Medical Journal*, September 29th, 1934, p. 604.

British Medical Journal

SATURDAY, OCTOBER 13th, 1934

ADVANCES IN TREATMENT OF TROPICAL DISEASE

A review of the work of the Calcutta School of Tropical Medicine since 1920 has been written by the Director, Lieut.-Colonel R. Knowles, I.M.S., and this appears as a supplement to the annual report for 1933. The review shows a record of useful and important activities in all branches of tropical medicine, but it is of particular interest in that it demonstrates what remarkable therapeutic advances have been made in recent years in tropical diseases, and what an important part the Calcutta school has played in these advances. The treatment of kala-azar is perhaps the most sensational of the successes. This disease invaded India some centuries ago, and spread over Bengal and Assam during the latter years of the nineteenth century. No cure was known, and the mortality was not less than 70 per cent. In 1915 treatment by antimony tartrate was discovered in Italy, and Sir Leonard Rogers introduced it into India. This treatment was brilliantly successful, but was prolonged, since thirty injections spread over three months were required, and a mortality of 10 to 20 per cent. still occurred. Since 1920 intensive investigations have been carried out with organic pentavalent antimonials, and now it is possible to cure kala-azar with eight injections, and the mortality is less than 5 per cent. As a result of these advances mass treatment properly carried out leads to the eradication of the disease in an infected area.

In the case of malarial therapy the advances, although not sensational, have been extremely important. In 1920 quinine was regarded as the sole remedy. Since then the Calcutta school has demonstrated that the total alkaloids of cinchona bark constitute an equally efficient and cheaper remedy, and has helped to establish the value of plasmoquine for destroying sexual forms of the parasite and thus rendering the patient non-infective to mosquitos. Atebrin, a synthetic compound which is a possible rival to quinine in the treatment of malaria, was tested fully in the school before being released for sale, and the most recent reports show that the drug is superior to quinine in cases of malignant tertian, and is indicated in special conditions, such as quinine idiosyncrasy, blackwater fever, and pregnancy. The school has also performed a most important service in discovering a form of monkey malaria. This should prove of great value in the experimental study of malarial therapy.

Hookworm infection is another disease of considerable economic importance in the therapy of which great progress has been made in the period under review. In 1922 the use of carbon tetrachloride was introduced into India, but the drug was found to be undesirably toxic to Indian populations, and from 1924 onwards investigations have been pursued on the use of carbon tetrachloride combined with oil of chenopodium. Experimental work during the last year has shown that carbon tetrachlorethylene is less toxic than carbon tetrachloride, and a combination of carbon tetrachlorethylene with oil of chenopodium is recommended as the best treatment for hookworm infection. These researches on intestinal helminths have led to advances in the treatment of a variety of infections. It has been shown that Indian santonin is just as effective as the very expensive Russian santonin in ascaris infections, and hexyl-resorcinol and carbon tetrachloride have both been found to be efficacious against tapeworm.

In the case of amoebic dysentery the outstanding advance in treatment was the introduction of emetine injections by Sir Leonard Rogers in 1912. This drug has been very successful in acute cases, but in chronic cases and in carriers it is much less satisfactory. The alkaloids of kurchi bark, when first investigated, gave excellent results, but later results were disappointing owing to errors in the preparation of the remedy. Last year, however, the drug carbarsone was found to be of great value in this condition. This organic arsenical was originally produced by Ehrlich in 1909, and Leake demonstrated its amoebicidal action a few years ago. The results obtained in Calcutta have been very satisfactory, and Colonel Knowles believes that its introduction may prove one of the most notable of recent advances in tropical medicine.

The therapeutic advances we have mentioned represent only a small proportion of the valuable work carried out by the Calcutta School of Tropical Medicine, but they show clearly enough the remarkable rate of progress in the treatment of tropical diseases. The outstanding feature of the last fifteen years has been the introduction of synthetic chemotherapeutic agents. For example, this report contains an account of the successful use of the following: neostibosan, plasmoquine, atebrin, carbarsone, and hexyl-resorcinol. We have to acknowledge with regret that not one of these compounds was discovered in this country. The Calcutta school is doing splendid experimental therapeutic work, and it is a pity that it should be forced to obtain so many of its weapons from outside the British Empire.

INHIBITORY HORMONES

The number of active hormones which are nowadays considered to be present in the circulating blood must often seem not a little bewildering. The blood is by far the most complex fluid we know, and the co-existence in it of hormones, enzymes, antibodies, proteins, carbohydrates, lipoids, salts, cells, and metabolic products presents a picture which is well-nigh impossible to grasp in its entirety. Each of these substances, whether it exists in chemically large quantities or only in pharmacologically or histologically recognizable amounts, reaches its appointed place and exercises its specific function apparently unaffected by

the presence of the others. By what remarkable circumstances this is made possible it is hard to conjecture. Are the physico-chemical conditions of the blood such that no important interaction can occur between the hormones and other physiologically active principles, or are the structures of all these bodies such that they cannot interact chemically? The latter seems the less likely view, but as we are yet ignorant of the chemical structure of the greater number of hormones we cannot be certain. Of course, important chemical reactions do occur in the blood, as, for example, the mechanism of transference of oxygen and carbon dioxide, and the buffering of the blood; but even in these cases there is no important change in the basal structure of the interacting bodies; indeed, the value of these reactions lies in their ability to maintain the *status quo*.

This tendency to keep the state of the blood within relatively very narrow limits of variation is one of the most remarkable of biological phenomena. Not only is this the case for the familiar chemical constants, but it is even more striking as regards the bacterial antibodies. With the latter we are dealing with a type of reaction of the organism which is not usually considered from the physiological point of view as an instance of what is called "homoiostasis." We think, however, that it should be so regarded, and some recent work of Collip[1] would appear to make it necessary to extend the conception of homoiostasis even further. Collip points out that evidence is accumulating which shows that substances are produced in the body exercising an inhibitory action on certain hormones. Of the antagonistic action of certain hormones some knowledge has already been gained. The familiar antagonisms of insulin and adrenaline, of insulin and the diabetogenic component of the anterior pituitary, are well known. Less generally recognized is the resistance of certain animals (the rabbit, for example) to parathormone, but every clinician is familiar with the high tolerance of certain subjects to thyroid. The increased resistance of subjects with a high temperature to insulin is also appreciated, though not explained. These examples engender a suspicion that the body in certain circumstances can oppose the action of a hormone. Collip has shown that long-continued administration of the thyreotropic hormone of the anterior pituitary led to a condition of resistance and non-reactivity, and—a most important point—that the serum of the resistant animal when injected into a normal animal produced a similar condition of resistance in the latter. It was further shown that the serum of a horse treated for some months with the growth factor of the pituitary can inhibit the effect of the latter on the hypophysectomized rat.

Other instances of the presence of inhibitory hormones have been described, and Professor Collip considers two ways of regarding the phenomenon. Either the administered hormone and inhibitory substance are related as antigen and antibody, or else the inhibitory substance is a normal constituent of the blood which is normally and physiologically balanced against the corresponding hormone so that it is masked. Collip takes the latter view and shows that it is borne out by clinical and laboratory experience. The repeated injection of hormone extracts will call forth the production of more and more inhibitory substances, so that each succeeding administration of hormone becomes proportionately less effective. There emerges from these considerations what Collip has called the "principle of inverse response"; this he defines as follows: "The responsiveness of an individual to administered hormone varies inversely with the hormone content or production of the individual's own gland." The author is careful to restrict his theory as yet to certain hormones. Nevertheless, it offers to over-energetic therapeutists a salutary warning of the need for caution in treating hypoglandular states, for the stimulation of the production of inhibitory bodies may defeat the very object sought for. The possibility of inhibitory sera in the treatment of hyperglandular states opens up a fascinating field of research. Particularly important will be the determination whether in any given functional endocrine imbalance we are dealing with an excess of inhibitory substance (hypoglandular state) or a failure to produce adequate amounts of inhibitory substance (hyperglandular state). No evidence is as yet available as to the nature of the antagonism of the inhibitory hormones, but it is clear that the sum of the constituents in the blood has not yet been reached.

[1] *Ann. Int. Med.*, July, 1934, p. 10.

ARTIFICIAL RADIOACTIVITY

During the last two years a series of remarkable discoveries has greatly changed the aspect of physical science. The growth of scientific knowledge is, of course, a connected process, and the new discoveries are an outcome of the direction of previous research. But the observer of the progress of physical science finds it easier to comprehend if he can recognize some outstanding points. One of these was the discovery of the neutron in 1932. Rutherford and his colleagues had searched for the neutron before 1920, and in his Bakerian Lecture of that year Rutherford forecast the properties of the neutron in one of the most remarkable passages in contemporary physics. Thus the idea of a neutron was not strange, but the recognition of its existence in 1932 had a stimulating effect on the imagination of scientists. Soon afterwards the electromechanical method of disintegrating atoms was discovered, and in America Anderson published the first experimental evidence for the existence of the positive electron. Then, early in 1934, M. and Mme Curie-Joliot demonstrated the possibility of manufacturing radioactive substances. This striking result arose out of their researches on methods of producing positive electrons. They found that when boron and other substances were bombarded with the swift alpha particles, or nuclei of helium atoms, emitted from the naturally radioactive substance polonium, they emitted positive electrons. The investigators were inspired to test whether the emission of the positive electrons from the boron continued after the polonium source of bom-

barding particles had been removed. They found that the boron continued to emit positive electrons for a considerable period after the removal of the polonium, and that the number of positive electrons decreased with the time, according to the same law as that describing the decay of a radioactive substance. They concluded that atoms of boron had been transmuted by the bombarding particles from polonium into radioactive atoms. Chemical treatment of the boron showed that the radioactive atoms produced in it consisted of a form of nitrogen. They named this synthetic radioactive nitrogen "radio-nitrogen." A few weeks later Cockcroft and Walton demonstrated that radio-nitrogen could be manufactured in their electrical apparatus by bombarding carbon with protons, or nuclei of hydrogen atoms. The production of a radioactive substance by shooting hydrogen atoms at a piece of carbon in an electrical apparatus is remarkable, as radioactivity is produced out of two of the commonest substances in nature, merely with the assistance of an electrical apparatus. These results provoke a multitude of ideas and suggestions. But some more details of the experiments must be appreciated before they can be seen in proper perspective. It is important to realize that the sort of radioactivity discovered by the Curie-Joliots is rather different from natural radioactivity. Their radio-nitrogen emits positive electrons when it disintegrates. Now natural radioactive substances emit wave radiations, the nuclei of helium atoms, and negative electrons. (Blackett and others have recently shown that some of the natural radioactive substances emit positive electrons, but in relatively small numbers.) No one as yet knows what the medical effects of rays consisting of positive electrons may be. So the old knowledge of the effect of radioactive rays may apply only partially to the new sort of radioactivity. Also, the Cockcroft and Walton apparatus, and similar machinery, is not as yet efficient in the physical sense ; and it is far from being a commercially economical machine. Artificial radioactivity is only a few months old, and so far the chief results of its discovery lie in the stimulus to experimental research, and in the reformulations of the conceptions of the structure of matter. Following Rutherford's suggestion of 1920—that neutrons might be expected to penetrate the nuclei of atoms with special ease, and produce various transmutations—Professor Enrico Fermi of Rome has recently obtained spectacular experimental results. Physicists are particularly fascinated by this event, as Fermi, who is only 33 years of age, is considered to be among the leading half-dozen theoretical physicists in the world. His sudden appearance as a brilliant experimenter is dramatic. Fermi has found that the atoms of thirty or forty of the chemical elements can be transmuted into radioactive atoms by bombardment with neutrons. The wholesale character of the effect stretches the imagination beyond its normal limit. Fermi finds that heavy atoms as well as light atoms are transmuted. If uranium is bombarded with neutrons its atoms appear to be transmuted into atoms of an entirely new type. Fermi suggests that the new element has an atomic number of ninety-three. There is some chemical evidence that the atoms have the properties to be expected of an element of atomic number ninety-three. If this research is confirmed Fermi will be the first man, not to discover a chemical element, but to synthesize a new one.

X-RAY AND RADIUM PROTECTION

With the object of arresting the sequence of casualties to *x*-ray and radium workers, the British *X*-Ray and Radium Protection Committee was formed in 1921, as the result of joint action between the Royal Society of Medicine, the Röntgen Society, the British Association for the Advancement of Radiology and Physiotherapy (now the British Institute of Radiology, incorporated with the Röntgen Society), the Institute of Physics, the Radium Institute, London, and the National Physical Laboratory. The personnel of the committee was afterwards widened to include representatives from the provincial schools. The committee issued its first recommendations in July, 1921. Successive revised reports followed in December, 1923, and May, 1927. At the instance of the British committee, international recommendations for *x*-ray and radium protection were adopted at Stockholm in 1928 by the second International Congress of Radiology. These were largely based on the British proposals. The problem of adequate protection for the *x*-ray worker has been substantially eased by the introduction of the self-protected tube and more recently by the "shock-proof" tube and equipment. Account is taken of this in the latest (fourth) report of the British committee, which follows in the main the form of the international recommendations, and contains a number of changes and additions based on the experience of the committee and of the National Physical Laboratory in its inspection and testing work carried out in association with the committee. Copies of the report may be had from the honorary secretaries of the Protection Committee at 32, Welbeck Street, W.1, or the director, National Physical Laboratory, Teddington, Middlesex.

CHEST INJURIES AND PULMONARY TUBERCULOSIS

In view of the legislation providing for war pensions and workmen's compensation, the determination of the exact part played by trauma in the development of a relatively common disease like pulmonary tuberculosis assumes great practical importance. In a recent review of the subject N. N. Stoichitza[1] states that trauma as the direct cause of phthisis was considered not at all rare until quite modern times, but that owing to the absence of bacteriological confirmation all accounts dating anteriorly to 1882 must clearly be interpreted with caution. The Great War provided ample material for further study. It was shown that, in this connexion, two types of injury of the thorax had to be differentiated. Thus, penetrating wounds probably never gave rise to phthisis, perhaps because they generally involve important vessels and result in death within a short time. Non-fatal injuries of this type may, however, be followed by pulmonary tuberculosis after a long interval, and this is accounted for by lowering of the general resistance caused by continued suppuration and the prolonged stay in hospital. Contusions of the chest, on the other hand, are rarely directly responsible for the development of pulmonary tuberculosis. Stoichitza mentions the various theories put forward to explain the mechanism. The most logical explanation would appear to be as follows. The shock at the moment of impact causes reflex

[1] *Presse Méd.*, June 30th, 1934, p. 1051.

closure of the glottis, so that rupture of the distended lung tissue occurs at the level of the blow, causing haemoptysis immediately or soon afterwards. If this rupture takes place in the neighbourhood of a latent tuberculous focus (most commonly situated in the hilar region) the injured area provides an excellent breeding ground for the tubercle bacilli already present. To establish direct cause and effect in these cases certain conditions must be fulfilled. The patient should have been in good health before the accident, and an *x*-ray photograph taken immediately before or after must show no evidence of active tuberculous disease. Apyrexial haemoptysis, indicating rupture of lung, should have occurred immediately or soon after the injury, and there should be a continuity of symptoms from that time onwards. The tuberculous lesions, which are generally severe and of poor prognosis, should develop at the level of the injury and within six months at the most from the date of the accident. Still further to exclude the possibility of coincidence, the patient should not have been exposed to massive contagion or to conditions which may have so lowered his general resistance as to be in themselves the cause of endogenous reinfection. The author then describes two cases—that of a man, aged 57, who received a blow under the clavicle with a block of wood, and of another, aged 44, with a knife wound in the same region—which appear to have fulfilled these conditions: the evidence submitted indicates that in each patient the injury was the direct cause of the phthisis which followed. The paper does not deal with the possibility of aggravation by trauma of already existing disease—obviously a problem much more difficult of solution. But one important practical point emerges—the need, for record purposes, of a clinical and *x*-ray examination of the lungs (not merely of the ribs) immediately after an injury to the chest in all individuals in relation to whom the question of compensation may subsequently arise.

CLINICAL RESEARCH AT GUY'S HOSPITAL

The Governors of Guy's Hospital and the Governors of Guy's Hospital Medical School have accepted an invitation from the Medical Research Council to co-operate in the establishment of a new "unit" for scientific research work in clinical medicine. It has been agreed that the Council will provide the salary of a whole-time director and of his assistants, with the cost of all apparatus and research material used by the unit. For its part, the hospital will provide suitable laboratory accommodation free of charge, and will place and maintain beds at the disposal of the director: the latter is to be *ex officio* a member of the visiting staff, with a seat on the Medical Committee and the committees of the medical school. These arrangements are to be effective for a period of five years in the first instance. Dr. Ronald T. Grant, F.R.S., hitherto working in the service of the Council in the department of clinical research at University College Hospital, London, has been appointed director of the new unit. The invitation was issued to Guy's Hospital by the Medical Research Council in accordance with its general policy of improving the facilities available in this country for the scientific study of disease in the human subject, and, with this end in view, of increasing the number of higher appointments for whole-time workers in this field. The financial resources the Council is able to apply to the purpose are those which were released when the senior post, formerly maintained by it at University College Hospital, and held by Sir Thomas Lewis, F.R.S., received permanent endowment through the generous action of the Rockefeller Foundation.

PROBLEMS OF DRUG ADDICTION

In his Norman Kerr Memorial Lecture last week on "Some International Aspects of the Problem of Drug Addiction,"[1] Sir Malcolm Delevingne began by drawing a distinction between the universal and the local forms of this evil. Practices such as opium smoking, the use of Indian hemp, coca-leaf chewing, and perhaps opium eating in India, are mainly confined to certain countries and races, and show no tendency to spread. These, though they have had significant international aspects in the past, are now matters of local rather than of general importance: the contrary is the case, because of their universality, with morphine, heroin, and cocaine addiction. From the international aspect, the newer addiction drugs (prominent examples of which are dicodid, eukodol, and dilaudid) may also be included in this category. Drug addiction, the lecturer insisted, is at bottom a matter of supply. The habit is facilitated and encouraged by drug traffickers, who are attracted by the enormous profits of this illicit trade. Hence the problem is not merely a national but an international one, because only by international co-operation can the machinations of the traffickers be defeated, and because all countries have the same problems to deal with in connexion with the causation, effects, and treatment of addiction. Sir Malcolm then proceeded to give an interesting sketch of the history of various efforts at international co-operation from 1921—when the League of Nations began the work entrusted to it, and the international obligations under the Hague Convention came into being—to the coming into full operation at the beginning of the present year of the Limitation Convention. As a result of these efforts the position to-day has improved greatly. There has been, during the past few years, a steady diminution in the amounts of morphine, heroin, and cocaine manufactured in the legitimate trade, while an efficient international machinery exists for the control over the export and import trade in these drugs. In the Permanent Central Board, in the Supervisory Body, and in the League's Advisory Committee a real international administration exists. Public opinion throughout the world has also been awakened as to the serious dangers of drug abuse, and interchange of information between various countries—especially as concerns the drug traffic—has been extended and made more effective. There is, however, a darker side, which forbids complacency. The illicit traffic still flourishes. Many individuals and gangs have been put out of action, but *primo avulso non deficit alter*! The situation in Europe, though not everywhere satisfactory, is clearing, but a sinister development is on foot in the clandestine manufacture in the Far East. The recent production at low cost of morphine from poppy straw may call for

[1] The Fifteenth Norman Kerr Memorial Lecture of the Society for the Study of Inebriety, October 2nd, 1934. President, Sir Humphry Rolleston, Bart.

careful study by the League. In conclusion, Sir Malcolm Delevingne indicated a number of questions which urgently needed solving; these, he contended, could only be satisfactorily dealt with by international co-operation. As examples of such problems he cited opium smoking, the treatment and "after-care" of addicts, the possibility of replacing heroin and cocaine by other drugs, the widely different consumptions of the different drugs in countries where conditions appear similar, and questions relating to the habit- or non-habit-forming properties of the newer narcotic drugs which are from time to time placed on the market.

TWO MEDICAL CENTENARIES

The British Medical Association, now in its 103rd year, and going so strong that it can jump 11,000 miles to Melbourne next summer for the Annual Meeting, looks with a benevolent eye upon the centenary festivals of younger medical bodies. To-day we print a brief account of the impressive ceremonies on October 4th and 5th with which the University of Durham College of Medicine, Newcastle-upon-Tyne, celebrated the hundredth anniversary of the founding of the Newcastle Medical School. A former Chairman of Council of our Association, Sir Robert Bolam, played a leading part in these ceremonies, and the Association was officially represented by the reigning Chairman of Council, Dr. Le Fleming. We publish also a historical note, by Dr. E. M. Brockbank, on the centenary of the Manchester Medical Society, and in this he refers to the exhibition which has been arranged as part of last week's commemorative proceedings to illustrate the history of medicine in Manchester. On that matter we would like to add one sentence, in praise of the valuable work of the author's son, Dr. William Brockbank, to whom is due much of the success of the exhibition now open at the Central Library, St. Peter's Square, Manchester.

A HEALTH EXHORTATION FROM SCOTLAND

Sir Godfrey Collins, M.P., Secretary of State for Scotland, spoke last week at Dumbarton, and devoted his remarks entirely to the importance of the local authorities of Scotland giving persistent attention to matters of health. He was probably speaking to the converted, but it was wise to indicate the need for consideration by those authorities of the evidence they wish to give before the recently appointed Departmental Committee on Scottish Health Services, and of preparation for action in the interests of public health when the report of that committee is published. Sir Godfrey Collins pointed out that in the sphere of health, as in that of economics, Scotland started out with certain initial advantages over some Continental countries, but that these countries were devoting very great attention just now to the health of youth and the cultivation of a healthy race, and so were rapidly overcoming the disadvantages of their initial lag. Our methods are not the same as theirs, and national characteristics are different; but neither the innate virtues of the Scottish race, nor the multiplicity of health services, nor the fact that there has been an immense improvement already in the health of the people, especially in the physique and well-being of the children, will suffice to maintain our advantage unless all those responsible are constantly seeking to do even better. Sir Godfrey mentioned national mortality and tuberculosis as matters in which a further advance is particularly needed. All this is true, and probably the Scottish local authorities will gladly take the exhortation to heart. But Sir Godfrey cannot be allowed to claim Lord Lister as one of "the natural products of the Scottish race." He was born in Essex, came of Yorkshire stock, and received his medical education in London.

THE A B C OF BIBLIOGRAPHY

Though most journals have their own conventions in the matter of literary form and of references, and authors' preferences are suffered only within narrow limits, every writer on scientific topics ought to be familiar with the technique of bibliography. As formal instruction in this subject is rare, beginners must learn either from their mistakes or from occasional papers treating of this difficult art. A cordial welcome may therefore be extended to an important article entitled "The Principles of Bibliographical Citation" (*Bulletin of the Medical Library Association*, 1934, N.S. xxii, 183), from the pen of Dr. John F. Fulton, Sterling professor of physiology at Yale, who is well known to British readers as a distinguished historian and bibliographer. Described as "an informal discourse addressed to writers of scientific papers," it is full of sound advice and written in an engagingly light and humorous vein. Insisting that references should never be taken from a secondary source, the author quotes the laconic reply of President Routh of Magdalen College, Oxford, to a younger man asking for some precept which represented the experience of his long and scholarly career: "Always verify your references." Dr. Fulton has much that is wise to say on the question of footnotes, split dates in references, and pagination. His own preference is to draw attention to papers with useful and accurate bibliographies by putting in square brackets after the formal reference a short phrase like "exhaustive bibliography." "Once it has become a habit bibliography is never irksome." Yet its technique is sometimes far from simple if we remember that in the case of the thirty-one John Adamses in the *General Catalogue of Printed Books* (British Museum, 1932, vol. 2) accuracy demands the inclusion of the dates of birth and death.

The Manchester Lloyd Roberts Lecture on "Medicine and the Further Evolution of Society" will be given by Professor F. A. E. Crew at the Royal Infirmary on Tuesday, November 6th, at 4.15 p.m.

The Prince of Wales will lay the foundation stone of the Birmingham Hospital Centre on Tuesday, October 23rd. The first instalment, for occupation three years hence, will provide 500 beds; when the whole scheme is completed there will be 740 beds in the main buildings, with 100 more in a separate wing for paying patients.

The veteran Italian surgeon Senator Francesco Durante, emeritus professor of clinical surgery in the Royal University of Rome, died on October 3rd, at the age of 90. He was elected an honorary Fellow of the Royal College of Surgeons of England in July, 1900.

MOTOR CARS FOR 1935

THE OLYMPIA SHOW

[From our Motoring Correspondent]

Once again the time has come round for the annual inspection of the new models of cars which manufacturers are producing for the 1935 season. The Show, which is the twenty-eighth organized by the Society of Motor Manufacturers and Traders, opened its doors at Olympia on Thursday, October 11th, and will continue until Saturday, October 20th. Although there are fifty-four firms showing cars—six more than a year ago—a feature of the industry is the concentration of car manufacture into fewer but larger concerns, evidence of this being afforded by the fact that at the 1928 Show there were no fewer than ninety-eight car exhibitors. The international character of the exhibition is, however, again fully maintained, for in addition to about thirty concerns displaying British cars, twenty-four are showing foreign productions —that is, eleven American and Canadian, five French, an equal number of Italian, two Belgian, and one German. As during last year's exhibition, the car exhibits are located on the ground floor of the old Main Hall, while the special coach-builders' section will be found in the adjoining National Hall.

Lower Car Taxes in 1935

When in his 1934–5 Budget the Chancellor of the Exchequer announced a reduction in the annual car tax of from £1 to 15s. per horse-power, to become operative on January 1st next, it was thought that this would lead British car manufacturers to pay more attention to cars with engines of greater horse-power than hitherto. So far, however, there appears, generally speaking, to be no marked tendency in this direction, for all the large British manufacturers appear to have decided that the lower taxes are more likely to result in a large increase in the number of users of small- and medium-power cars of from 7 to 15-h.p., and of an extension of the "two cars per family" movement, and that consequently there is more business to be done in these markets than is likely to arise from existing motorists purchasing cars of greater horse-power than hitherto. On the other hand, doubtless anticipating that the reduced taxes will induce a certain section of the motoring public to use vehicles of higher horse-power, there is a slight increase in the number of American cars displayed. By agreement between the members of the society, no announcements of new models were made before about the middle of August, but since that date the motoring press has revealed the main lines of the programmes of the principal makers. A new feature has made itself evident this year, that of a few makers announcing only part of their new models, having kept in reserve one or more "surprises" for the exhibition, reference to which, if they materialize, will be made later.

Price being an important matter in these difficult days, it may be said at once that while prices are higher in a few cases they are on the whole unchanged. Even, however, where the latter term applies, in view of the numerous detail improvements and added conveniences, cars, if not actually cheaper, are certainly "better value for money" than ever. As usual, the Show has an appeal to motorists of all classes—from those to whom the £100 car is attractive, as well in respect of cost as intended use, to the luxurious road Pullman, the price of which may be anything from £2,000 to £3,000. The plan of offering buyers a choice of cars with two sizes of engine at the same price appears to be meeting with increased favour. Thus the Austin Twelve can have either a 13.9-h.p. or 15.9-h.p. engine; the Standard Sixteen and one of the Hillman models offer the choice of a 16-h.p. or 20-h.p. engine; the Morris Oxford can be either 16-h.p. or 20-h.p.; and one of the Rileys 12-h.p. or 15-h.p.

Mechanical Tendencies

Though there are still many motorists interested in the technical characteristics of cars, it is probably true to say that to-day the majority of car users are content to leave these matters to the manufacturers, taking it for granted that no maker will turn out cars which, mechanically, are not thoroughly up to date in design and construction. In other words, the majority of users to-day are mainly concerned with the questions of first cost, running expenses, good appearance, reliability, and durability. Despite this, it is perhaps useful at Show time to undertake a brief survey of the progress that is being made in chassis as well as in bodywork design and construction.

While vehicles with eight-cylinder engines are to be found on many of the foreign vehicles, in this country cars with engines having either four or six cylinders continue to share the popular favour, the relative position of the two varieties being approximately unchanged. It is interesting to note, however, that two well-known makers, although continuing their 10-h.p. four-cylinder cars, have introduced similar chassis and bodywork, but with six-cylinder engines, to meet the demands of those users prepared to pay a little more for the extra flexibility of the "six." The modern engine, whether with four or six cylinders, has reached a point, as regards both reliability and efficiency, which leaves little room for further improvement. Some "cleaning up" in the arrangement of the various engine adjuncts has, however, been effected, but otherwise there are no striking departures to record. What may be regarded as a reversion to old practice is the adoption by the Lanchester Company of engines having combined cylinders and heads, instead of the now usual method of constructing these separately. The reason given for the change is that there is less liability to cylinder distortion and wear, and that, with modern methods, the question of decarbonizing piston heads and combustion chambers offers no increased difficulty.

The Battle of the Gears

In the majority of cars the more normal form of change-speed gear is still employed, but it will be found that gearboxes of what are known as the synchromesh variety, which greatly facilitates easy and silent changing, have been more generally adopted. In the Alvis, Hillman, and Humber cars synchromesh is now provided for all four speeds, while in the Austins and Standards three of the four speeds are of the latest type. Free-wheel devices to facilitate gear-changing, so arranged that they can be put out of action when desired, are also being more widely adopted, being now found on Humber, Rover, Triumph, and certain of the Standard cars.

The fluid flywheel transmission with preselective self-changing gear continues to be used on the B.S.A., Daimler, and Lanchester cars, the first-named feature in a modified form being now also found on some of the Singers. The self-changing gear has been used on the Armstrong-Siddeley cars since 1928, and is, of course, retained; it has also been adopted on the Crossleys, while it is being offered as an extra on the A.C., Sunbeam, and some of the Standard cars. An interesting innovation is seen in the Sunbeams and Talbots, this taking the form of a special clutch working in conjunction with the self-changing gear, the purpose being to reduce wear on the gear bands and provide smoother operation. An interesting new gearbox is also to be found on the 12-h.p. six-cylinder Wolseley "Hornet," this combining a normally used clutch and a self-changing gearbox giving three speeds in both forward and reverse directions. Those interested in the details of these new types of change-speed gears and other improved technical points of motor vehicles will be glad to know that a small portion of the exhibition is again being set apart for a display of working models by various manufacturers.

Frame Construction and Suspension

Some new ideas in chassis frame construction are to be seen on the new Lanchester 18-h.p. and the Riley 1½-litre cars. The feature of the Lanchester is the addition of lattice steel welded to the inside of the frame members to provide greater torsional stiffness. In the Riley the frame members are of box section, while the usual

X-shaped cross members are replaced by a bracing of steel wire cable. Independent road wheel springing, which has become very popular in France and the United States (in which latter country it is known as "knee-action" springing), does not as yet appear to have caught on with British car designers, it being found only on one of the Alvis and Sunbeam models, and certain of the Singers.

A Front-Wheel-Drive Car

There have been rumours that, following a Continental lead, cars with front-wheel drive would be introduced by British makers. The only vehicle having this feature—and an interesting one it is, for it has, in addition, independent wheel springing and novel bodywork construction which obviates the use of the usual chassis—is the Citroën Twelve, which is of French design, but largely manufactured in this country. Other new models to which special attention may be drawn include, for those whose price limits are between £100 and £150, the remodelled Austin Seven and the new Morris Eight. For motorists looking for medium-priced cars with six-cylinder engines there are the Austin, B.S.A., Morris, Lanchester, and Vauxhall, while higher up the scale new vehicles are to be found in the 17-h.p. Armstrong-Siddeley and the 18-h.p. Lanchester, both having six-cylinder engines and self-changing gears, the 12/55-h.p. British Salmson, the Riley 1½-litre car, and the Triumph "Gloria" models.

Minor new tendencies to which attention may be drawn include the provision of twin wipers on windscreens for the convenience of the passenger as well as the driver, arrangements for carrying luggage and spare wheel out of sight, and the general adoption of flush-fitting direction indicators, now made so that, when used, they automatically fall after a few seconds. Although tyre troubles are no longer the bugbear they were in the early motoring days, a growing practice much appreciated by the owner-driver is that of providing cars with built-in jacks, this feature being now found, among other vehicles, on some of the Armstrong-Siddeley, Humber, Standard, Triumph, and Talbot cars. A useful feature which one would like to see more generally adopted is to be found on one of the Triumph models—namely, a steering wheel which is adjustable as to both height and angle to suit drivers of different stature; while yet another innovation worth copying is that of the rust-proofing of all exposed metal parts on the Rover chassis.

Bodywork Design

There were many who anticipated that, following the American, and to some extent the Continental, lead, British manufacturers would produce cars fitted with the "streamline" types of body. Actually, however, while bodywork in design and finish continues to show steady improvement, it will be found that British makers have, in the majority of cases, decided, "to make haste slowly," the only British car at the time of writing of ultra-streamline design being the Singer Eleven. From the scientific aspect it seems to be agreed that streamlining has no material effect on speed until from 40 to 60 m.p.h. is reached. At the same time it must be remembered that there are always those who prefer to purchase a car which embodies something out of the ordinary.

For general use the saloon type of car continues far and away the most popular, and while not of *outré* design, its lines are gradually becoming more flowing. There is also a marked tendency to give the fronts of cars a more "rakish" appearance by the use of sloping radiator guards. Attention may further be drawn to the improvements which are being made in the methods adopted for the ventilation of the interior of saloons and other covered cars, a point which will be appreciated by those who have to make long journeys. Although not of great interest to medical men, a section of the car exhibits which has a strong appeal to the younger generation of motorists of both sexes is that of sports models, examples of which are to be found on the M.G., Singer, Riley, and other stands. Despite their popularity in the United States, the fitting of wireless receiving sets on British cars has not made any great headway. Although there are several sets on the market which can readily be installed, only two manufacturers—Hillman and Standard—include wireless-equipped cars in their programme.

Among the Accessories

A feature of the accessory section of the Exhibition, which as usual is to be found mainly in the galleries, is the introduction of a number of devices specially intended to meet the new conditions set up by the latest motoring regulations—particularly in connexion with the order prohibiting the use of motor horns in built-up areas during the night. It has been quickly discovered that a good method for motorists to indicate their approach to a road crossing is momentarily to switch on the head-lights. To facilitate this one firm has introduced a new lamp operated by an "on-off" switch, which can be conveniently mounted on the steering column. When it is desired to travel after lighting-up time until 11.30 p.m. with the head-lights on, the normal switch lever is pushed over to, and left at, the "on" position. For night signalling purposes, however, the normal switch is placed at the "off" position, the head-lights being then momentarily switched on and off as desired by a push-button on the top of the switch, just in the same way as the electric horn is operated. Still another firm has introduced a switch which by a simple movement can be made to operate the horn during the permitted hours and the head-lights during the night! This question of the non-use of the horn during the night is arousing considerable discussion in motoring circles, especially as the law of the land still requires all cars to be fitted with a horn or other means of giving audible warning.

A tour of the accessory section is always worth while, for it will reveal many new adjuncts to a car that add to the comfort of motoring during the cold, wintry months. Also to be seen are some new preparations for addition to the radiators of motor vehicles to prevent freezing up during the extremely cold nights of the winter months. The ignition on practically all modern cars is effected by coil and distributor, but it is noteworthy that one or two new designs of magneto have been introduced which can readily be substituted for the existing ignition equipment.

In next week's issue it is proposed to follow the usual plan of referring to some of the new car models, more particularly those which are likely to appeal to the majority of medical men from the points of view of cost and suitability. Finally, it may be mentioned that the Show is open daily (except Sunday) from 10 a.m. to 10 p.m. On Tuesday, October 16th, and Thursday, October 18th, the charge for admission is 5s. up to 5 p.m., and 2s. 6d. after that time, the entrance fee on all other days being 2s. 6d.

C. J. W.

At a meeting of the Empire Social Services Group of the Royal Empire Society, Lady Denham outlined the work of leprosy relief and cure in British Guiana. There were some eight hundred lepers in hospital in British Guiana when she and Sir Edward Denham arrived; and many children—the home closed because of parents in hospital, or in whom disease had been either arrested or cured—were housed in the same building, and even taught by lepers. To combat this ethically and financially unsound method they decided to build a "home" for such children, and to segregate them. They had already collected £2,854 and had drained the colony dry, but £800 was still needed before the building could be put up on land provided by Government. Contributions should be sent to: Lady Denham's Home Fund (for Leprous Children), c/o Lloyds Bank, Ltd., 222, Strand, W.C.2. Sir Leonard Rogers, in supporting, emphasized that "children were the key to the whole problem of leprosy," because children were most susceptible to the disease, and, further, approximately 95 per cent. of the cases could be cured if tackled in the early stages. In India, under Lord Reading as Viceroy, they had raised £150,000 and made a survey of two million people. Leprosy could be eliminated within a very few decades if tackled boldly and systematically, as envisaged by Lady Denham's scheme.

Scotland

Glasgow Housing and Health Exhibition

Opening the twelfth housing and health exhibition, promoted by Glasgow Corporation, Lord Provost A. B. Swan said that Glasgow had been criticized in the past for her housing conditions. The city's Housing Committee, however, had been as energetic as any other in Great Britain, and had tried to make improvements every year. It had also been said that there was a sameness about Glasgow's houses which was almost sordid in character: it must be remembered that the Corporation had to work within limits of cost, and to provide as many simple houses as possible. Under the Housing Acts since 1923 Glasgow Corporation had itself built 36,000 houses, and with help 48,488 up to the end of August, 1934 ; this was not a bad record. The Government was now trying not only to eliminate slums, but also overcrowding, and in certain types of houses on view in the exhibition suggestions were made for the solution of this problem. Other exhibits illustrated the most hygienic ways and the best labour-saving devices for the home.

Four model houses constitute the principal part of the exhibition. The all-Scottish house, built by the Scottish National Development Council, is of modern design based on the Scottish traditional form of domestic architecture, and to meet present-day requirements in sunshine and ventilation the horizontal casement window has been introduced. Another model comprises two flats of a modern five-story Vienna tenement, the structure being fireproof and vermin-proof, with skeleton frame of steel standard units and concrete floors. A novel feature is the provision of a garbage chute made of asbestos cement, with openings on every floor, which conveys household refuse to a portable receptacle on the ground level. The Housing Department of Glasgow Corporation exhibits three- and four-apartment flats similar to those the department is now erecting for the rehousing of people from overcrowded conditions. These houses are built of brick and finished in roughcast, the cost for the four-apartment house being £510, with a rent of 12s. per week, and the cost of the two-apartment house £270, with a rental of 10s. 6d. per week.

Laboratory of the Royal College of Physicians

Sir Robert Philip, in his annual report as curator of the Laboratory of the Royal College of Physicians of Edinburgh, comments on the increasing co-operation between this institution and various public bodies, such as the Department of Health for Scotland, the Home Office, and the Health Section of the League of Nations. At the request of the Committee on Scottish Health Services the specific death rate for that country was investigated, but it was considered advisable to extend the inquiry to include those of England and Wales and Sweden. Certain remarkable and unsuspected regularities emerged, leading to the following conclusions. (1) In England and Wales and in Scotland the improvement attained at any particular time in the death rates of the various age groups depends primarily upon the date of birth of the individuals concerned, and only indirectly upon the particular year under consideration. An exception was noted in the case of the infantile death rates, which showed definite lags in their dates of improvement. (2) These results were shown to be consistent with the hypothesis that the important factor from the point of view of the health of the individual during his whole life was his environment up to the age of about 15 years, and that improved conditions at later ages had little direct effect. Improved conditions appear to have brought about beneficial results primarily through their action on the children. (3) It is suggested that improvement in infantile mortality is dependent in large measure on improvement in maternal health. This would explain why the infantile mortality rates lagged in their fall. (4) The figures for Sweden did not show the same simple regularities. It would appear that in that country a disturbing force began to operate about 1850, adversely affecting adolescents and young adults. The work is being continued, and the figures for Holland are being studied. Taken as a whole the fundamental conclusion is that the death rate is a product of two factors: one depends only on the age of the group considered, and is presumably essentially physiological in significance ; the other depends only on the year of birth, and is taken to be characteristic of the environment during childhood. More intricate calculations indicate that there is likely to be in the future a very considerable increase of persons between the ages of 65 and 85. In association with the Home Office, the inquiry into the relative toxicities of the solvents toluene and benzene was continued and completed. It appeared that the former was the less toxic, a fact attributable mainly to its lower volatility. The study has now been extended to include an investigation of the effects of ventilation upon the incidence of benzene poisoning in factories, the blood picture (aplastic anaemia and agranulocytosis) being employed as an index. Antirabic treatment was investigated for the League of Nations. No definite evidence was obtained that any one of the eleven methods was definitely superior, nor that live vaccines were more efficient immunizing agents than dead vaccines under the conditions, such as dosage, in which they were employed in practice. Sociological factors were found to bring about such divergencies in different countries as to render impossible any definite comparative evaluation of the different therapeutic procedures.

Health of Glasgow

The annual report by Dr. A. S. M. Macgregor, medical officer of health for Glasgow, shows that last year both the death rate and the birth rate in Glasgow were the lowest on record. The death rate was 13.4 per 1,000, as against 14.7 in 1932 ; this comparatively low figure is attributed to the good weather conditions during the greater part of the year. The estimated population of the city was 1,103,357, and the natural increase—that is, the excess of births over deaths during the year—was 6,614. As a result of housing operations the population showed considerable thinning out in the central wards of the city, with increases in the outer wards and in the adjacent county areas. The birth rate, 19.36 per 1,000, was only one-half of the rate prevailing fifty years ago. The infant mortality rate was 96 per 1,000 births, as compared with 112 for the previous year, and was the second lowest recorded for the city. This decrease was attributable to a low incidence of measles, whooping-cough, and pneumonia associated with the favourable weather, contributory causes being improved sanitation, housing, nutrition, and education. The principal feature in regard to infectious diseases was the continued high incidence of scarlet fever, the total number of cases registered being 8,378, which, however, was lower than the 9,158 cases for the previous year. Of the patients suffering from scarlet fever, 22 per cent. were not removed from their homes owing to pressure on hospital accommodation. The position with regard to the provision of institutional treatment for tuberculosis remained unaltered. Efforts were being made towards securing appropriate treatment for those who required it most. Improved housing conditions were now enabling isolation at home to be carried out

more successfully in the chronic case after preliminary treatment in a sanatorium or hospital. Another feature of considerable value was the judicious measure of rehousing of families in which there was a member suffering from open tuberculosis.

England and Wales

Healthy London

The health activities of the London County Council have been so closely followed from week to week in these columns that the section of the Council's report for 1933, by Sir Frederick Menzies, dealing with public health[1] contains little that has not already been published. The birth rate continues to fall; for 1933 it was the lowest yet recorded, being 13.2 per thousand, as against 14.3 in 1932. The number of births was more than 14,000 below that for 1918, when the influence of the European War on the birth rate was at its height. The infant mortality, however (54 per thousand births), was also the lowest on record. It is a little invidious to analyse these figures for different London boroughs, whose boundaries shade into one another, but taking the years 1930–2 and comparing them with the years 1921–3 one finds that while the infant mortality rate decreased almost everywhere in London it increased in five boroughs, and in one of them —namely, Paddington—the increase was as much as 19.7 per cent. In all the boroughs which show an increase in infant mortality—the others being the City of Westminster, Hampstead, St. Marylebone, and Holborn—the illegitimacy rate is excessive, being (except in Hampstead, where it is 9.4) over 11 per hundred total births. On the other hand, in Bermondsey, where infant mortality has declined by one-third in the course of ten years, the illegitimacy rate is the lowest in London (2.1 per hundred births). The deaths from measles, whooping-cough, scarlet fever, and diphtheria in 1933 were respectively 0.02, 0.08, 0.02, and 0.08 per thousand of population. Deaths from puerperal fever in London numbered ninety-six, and from other accidents of childbirth 119, the total maternal mortality rate being 3.66 per thousand live births. It is remarkable that for the six-year period 1928–33 maternal mortality was lowest in the East End boroughs—namely, Shoreditch, Bethnal Green, Stepney, and Poplar—and in St. Pancras and Lambeth, in all of which the rate was below 3 per thousand births. Leaving on one side the City of London, where cradles are scarce, the highest rates recorded were in Westminster (6.1), Stoke Newington (5.8), and St. Marylebone (5.2). The death rate (all causes) in 1933 in London was 12.5 per thousand living, slightly above the average of the last ten years, but forty years ago the rate was about 19. It has steadily fallen for all the principal infectious diseases and for tuberculosis, pneumonia, and other respiratory diseases, has fluctuated for influenza, and has risen for heart disease, cancer, and diabetes. The report contains much useful information about the multifarious powers and duties of the Council in connexion with common lodging houses, slum clearance, milk sampling, and the tuberculosis and venereal diseases schemes, and includes also the results of an inquiry made at the request of the Board of Control into the mentality of children, one or both of whose parents had been certified as mental defectives. The number of children examined was 617, representing 336 families. Of this number 2.1 per cent. were found to be supernormal, 51 per cent. normal, 31 per cent. retarded, and 15.9 per cent. mentally defective.

[1] *L.C.C. Annual Report, 1933*, Vol. iii (Part I). *Public Health*. Report of the County Medical Officer of Health. P. S. King and Son, Ltd., Westminster. (1s.)

Cardiff Mental Hospital

The annual report for 1933 of the City of Cardiff Mental Hospital contains some statistics and notes of general interest. It is pointed out that while last year the percentage of voluntary admissions was the highest in the country, a further advance was recorded this year, the figure rising from 45.5 to 55.2. The percentage of admission of temporary patients also rose from 3.2 to 7; thus only 37.8 per cent. of the patients were admitted under certificates. The discharge rate also remained high, being 69.3 per cent., including those discharged as recovered or relieved. Of the patients discharged 70 per cent. had resided in the hospital for less than six months, and 26 per cent. left after a stay of less than two months. Factors which are believed to be shortening the stay of patients in this hospital are the granting of short leave of absence, the facilities for attendance at the out-patient clinic, and the activities of the social service department. Dr. P. K. McCowan, the medical superintendent, in his report states that in no circumstances is a voluntary patient certified at the institution; if such a patient insists on leaving when his mental condition necessitates continued observation arrangements are made for his transference to the local infirmary, where certification can be effected if necessary. In 1933 only two voluntary patients returned under certificate. On the male side a ward has been provided for voluntary patients only; this has been most welcome to the patients, who are reassured by learning that they will only be called upon to associate with voluntary patients like themselves. Occupational therapy has proved most satisfactory. All sisters and male charge nurses continue to have a three months' course at the central classrooms, to enable them to supervise the daily classes held in the wards. The staff on each side consists of a head therapist with two assistants. In addition, on the female side there are four voluntary workers, whose services have proved very useful. During the year under review 277 females and 269 males passed through the classes. The average number of patients employed in useful tasks in the hospital, including the above, represent 78 per cent. of the male population, and 81 per cent. of the female. Classes in physical drill were restarted in 1933. While some improvement is manifest in the poorer type of patient, Dr. McCowan finds that the best results are obtained in the more educated, who have some genuine interest in the drill. The work of the out-patient clinic is also advancing, sessions being held twice each week. A routine ophthalmological examination has revealed interesting abnormalities in many instances, hypermetropia, with or without astigmatism, and presbyopia being notably common. Research work at this institution during 1933 included a study of infection of the nasal sinuses. Infection of the tonsils and nasal sinuses was found to be an important aetiological factor in a small minority of psychotics; its eradication in these cases led to cure or amelioration. Special emphasis is laid by Dr. McCowan on the connexion of these infections with the toxic exhaustive psychoses, where they appear to be comparatively common, and frequently causal factors. Another line of investigation revealed that a large proportion of the toxic symptoms accompanying prolonged somnifaine narcosis was due to disturbance of the carbohydrate metabolism of the liver and heart by the narcotic, resulting in ketosis, tachycardia, fall of blood pressure, and varying degrees of circulatory collapse. These symptoms could be largely obviated by the administration of insulin and glucose as an integral part of the narcotic treatment. Carotene was found to be effective in increasing the weight of patients convalescing from manic-depressive or confusional attacks, there being a corresponding improvement in the mental and physical conditions. An exceptionally high percentage of reactors to the tuberculin test

was discovered, and it is thought that among the patients there may be a certain number of open cases of the relatively chronic and symptomless type. A systematic investigation has been instituted in conjunction with the tuberculosis department of the Welsh National School of Medicine. The patients were for the most part old-standing cases of dementia praecox, and Dr. McCowan thinks this fact may be at least as important as questions of environment, for there is undoubtedly a close relation between the two diseases, possibly even of a hereditary nature.

The Radium Institute, London

The annual report of the Radium Institute (London) for 1933 continues to record satisfactory progress, and research work on massive dosage (radium beam therapy) from a unit of 5 grams of radium is in progress. A considerable number of beds have been allocated for this purpose, and, as they were previously used for the reception of paying patients, this public-spirited action has entailed considerable financial sacrifice. A high-voltage *x*-ray outfit has been installed at the Mount Vernon Hospital, Northwood, and will enable important research and therapeutic work to be carried out there. The medical report, which is drawn up by Drs. Roy Ward and Durden Smith, contains a valuable summary of past and present work, mainly arranged in tabular form. During the year contributions to the literature of the subject have been made by Dr. Roy Ward on the clinical side and by Dr. J. C. Mottram, the director of pathological research, on more purely scientific matters.

Nutrition of School Children in Hull

In the school medical service section of the annual report for 1933 of the City and County of Kingston-upon Hull Dr. Nicolas Gebbie, medical officer of health, points out that, while there is a great deal of discussion at present about malnutrition among school children, the assessment of degrees of nutrition is difficult in the case of the individual, and even impracticable on a large scale. Statistical information based on average weights and heights is of little value, for well-nourished children may be below the average in weight and under-nourished children may be above it. Even an individual assessment after careful medical examination is fallible, and does not lead very far, for malnutrition may be due to such different factors as insufficiency or unsuitability of food, inability to assimilate fully the food which is eaten, and insufficiency of sleep, exercise, or fresh air. Errors of diet appear to be most common in children well above the poverty line, the child being allowed to choose the food it prefers, and to eat at irregular intervals. An investigation of the position as regards meals and sleep was made in May, 1933, in the children attending the open-air school in Hull, among whom there are many cases of malnutrition, due to various causes. These children received half a pint of milk on arrival at the school, and a substantial midday meal, which most of them enjoyed. No other food was allowed. The children returned home about 5 p.m. It was found that no fewer than 178 had two meals between then and bedtime, while ninety-nine had one meal. Most children from the age of 8 upwards went to bed between 8 and 10 p.m. This investigation arose from the discovery that many children came to the ordinary schools in the mornings without having had any breakfast, or very little, the reason being lack of appetite. In many cases it was clear that the child had got into a "vicious circle," having had the last meal of the day, and often an unsuitable one, at 8 or 9 p.m. As a result there was a condition of subacute gastritis, with the usual loss of appetite. Since the child had had no breakfast, the mother sent it to school with a most unsatisfactory lunch to be eaten about 11 a.m. This prevented justice being done to the midday meal, which would probably have provided more satisfactory nutrition. The child becomes hungry about 4 p.m., and receives a meal on getting home. After this he plays for several hours, becomes hungry again, and receives another meal about 9 p.m. There is no doubt, the report continues, that it would be advantageous for children to receive only one substantial meal between their arrival home and going to bed, and for bedtime to be earlier in most cases. As one result of this investigation all children on entering the open-air school are supplied with a leaflet for their parents, which stresses the importance of regularity in the taking of food and of sufficiency of sleep. Dr. Gebbie reports that while ringworm on the scalp has reached the lowest level of incidence on record, and can possibly fall no further, scabies is far too prevalent. Inefficient home treatment with sulphur is cited as one of the causes, the parents not realizing the need for medical supervision to ensure the treatment of contacts and the full cleansing of clothing and beds. Reinfection is common. It is also noted that many parents have contended that the cost of transport of the whole family in these cases to the corporation sulphur baths is too high. An appeal is made in the report for a fully staffed child guidance clinic on a comprehensive basis, with home visitors specially trained in psychological work.

Estuary Muds at Southend-on-Sea

A small establishment for "medicinal mud baths" was opened by Councillor H. E. Frith, the mayor of Southend, on October 2nd. This venture is due to the initiative of Dr. Mary Nicol, who has made some study of the medical uses of estuary muds in Germany. The mineral analysis of the "schlick" at Wilhelmshaven and that of the Thames estuary appear to be similar, both being very rich in silica (60 per cent.), and in aluminium oxide and iron. The organic content and the biological properties of these muds have not yet been investigated. These marine deposits have a general resemblance to those of the well-known "limans" of the Crimea, which are now very largely used for rheumatism and other diseases, both in the fresh state on the coast and when dried and transported to the cities, especially for use in the winter months. At a reception in the Clifton Hotel, with Dr. J. F. Walker in the chair, Dr. Fortescue Fox in a short address congratulated the town of Southend and Dr. Nicol on the first attempt to organize the medical use of estuary muds in England. Southend, he said, had special advantages as a London health resort on the "Thames Riviera," with the east-and-south climate, which was very favourable to health, and especially to the fundamental function of breathing. The place possessed three good elements in its shelter and saltings, and a sunny and southern aspect, and also had the driest winter climate in Britain. There was great need for small treatment centres at the great holiday resorts, where natural remedies (air, light, heat, water, the peloids or natural semi-solid media and movement) could be scientifically applied under medical direction. Not all holiday makers were quite well, and their time at the seaside gave them a chance for some simple recuperative treatment, which might prevent many serious diseases and breakdown. Such a centre would be a boon to ailing people all the year round at Southend, but especially in the months of winter and spring. Those who were subject to catarrh and feeble circulation and to many nervous and rheumatic affections would all certainly benefit from a properly organized establishment. Dr. Nicol had done wisely in including not only the estuary mud, but also local arm and leg baths and tonic aerated hot sea-water baths in her scheme.

Reports of Societies

"MEDICINE AND MORALS"

Lord Horder's Address

The annual general meeting of the Medical Society of London was held on October 8th, the routine business being followed immediately by the address from the chair of the incoming president, Lord Horder of Ashford. The title given to the address was "Medicine and Morals."

Lord Horder began with the admission that the title had a certain spurious piquancy. The word "morals" had become closely attached to certain aspects of social behaviour, but he employed the word in an older and wider sense, meaning the sum of the criteria governing human conduct and thought at the time being—a kind of design for living, a pattern which it was considered well to follow, whether for the individual or for social groups. Morals in this sense must have begun very early in human history, and they had been constantly changing—in some eras slowly, in others swiftly. The pattern for the individual changed more quickly—and therefore sometimes more catastrophically—than for society in general, a circumstance which was fortunate for society. The individual could even afford to say, "I have no morals" (though by that admission he declared his morals, which were, in effect, that he was a law unto himself), but society could never be without morals, because in that event it would cease to exist. If morals were an art only, and not both an art and a science, no doubt the pattern of life would remain much the same for generations together, as, indeed, it did before science began. But science was born at last, though the travail was long, and with the birth of science medicine for the first time became a living thing.

The Physician as the New Priest

Medicine as an art, of course, was ancient. Yet if the litter of superstition and dogma which encumbered it even up to Harvey's time were swept away there was really very little left that could be called an art. Hippocrates laid down some excellent basic principles, but for two thousand years no edifice was built upon his foundation, for the simple reason that the bricks and mortar of science did not exist. Medicine, during all this time, enjoyed the companionship only of philosophy—a barren alliance so far as the patient was concerned, for he could get his mental comfort from the priest or from humanistic teachers, whereas for his body the physician had very little to offer him.

At first slowly, in face of opposition, and then more rapidly, as the new criteria became irresistible, science changed the pattern of life. It also activated medicine, which made life longer and better worth living. Men began to take control of life themselves, until to-day the danger was, not that they should be cramped by authority, but that they should be fatigued or even destroyed by their own freedom. Realizing that the causes of their unhappiness, as of their physical ills, lay in the biological sphere, they sought the physician rather than the priest. Bewildered by the prospect which their liberty opened out, and all unaccustomed to deal with the raw material of their natures as now revealed to them, they went to the doctor for guidance. To them he was the realist, the link between the fine abstraction which still beckoned and the particular application for which they still hoped. "He that sinneth before his Maker, let him fall into the hands of the physician." Why? Because to the physician the individual was not a metaphysical constant, but a physical variable, and this outlook enabled him to lift up many a weary head and comfort many a sorrowing heart. The patient might well go too far along the road of scientific economy, and place his trouble in a lower category than that to which it rightly belonged. It might be the loss of his aspirations and ideals from which he was suffering, not a mere failure to adjust his physiological or psychological balance, and thus the doctor must act as priest as well as physician.

It was an advantage, at any rate, that in these days the cards were on the table. Thirty years ago Maudsley complained of the hypocrisy which led people to condemn the plain speaking of their ancestors and practise a decent concealment of their sensualities. Were Maudsley living to-day he might be surprised at the frankness with which patients spoke on matters on which the patients of a former day were reticent—a frankness not always free from a suspicion of relish. Clifford Allbutt once said that there was as much harm done by talking about things as by suppressing things, and that to familiarize evil was to tolerate it, and Lord Horder considered the sentiment appropriate to much that happened in the consulting room, and that there was something psychopathic about the glib way in which some patients described their sex life.

The Problem of Birth Control

Entering the arena of social morals, where, he said, on some issues it behoved medicine to take a guiding hand, while with regard to others it was more appropriate that society should lead, medicine answering pertinent questions, and being prepared to give practical help, he spoke first on the subject of birth control. Here, in spite of the fact that lay interest and inquiry were both awake and pressing on this subject, medical opinion was strangely discordant and ill formed. The majority of medical men and women still began practice with no instruction in contraceptive methods—a startling anachronism when it was remembered that memorandums had been issued to public authorities by the Ministry of Health encouraging the formation of clinics and the giving of medical help to women when contraception was desirable for saving life or preserving health. In private practice patients not seldom complained that their doctors failed to give them the practical help they had a right to expect. This failure to help was not due to the doctor holding views that ran counter to the principle at stake, but to ignorance of methods and technique applicable to particular cases. The defect should be remedied without delay. It would be lamentable if the moral fabric of society became definitely formed in this matter, while medicine failed to give the guidance which it alone could give. Was it that medicine itself offered a resistance because it was still influenced by a certain body of religious doctrine? Or was it thought that such help might encourage extramarital sex relations? That pregnancy should be regarded as the chief or only deterrent to illicit intercourse was a terrible indictment against individual idealism on the one hand, and the aims of social reform on the other. Morality based upon fear of penalties was entirely a static affair, though doubtless of service at the beginning of human progress. Surely society was ready for a harder lesson than that. Increased control in the sphere of sex, like increased control elsewhere, was an inevitable result of the ceaseless probings of science, and that such increased control might be used for ill as well as good was a general, and not a particular, result of social development. Perhaps the profession was still awaiting the mandate of a completely convinced society. It ought not so to wait. It ought to be ready, with the fullest assistance so far provided by medical science, to answer in practical and positive fashion the questions put by those who, having emerged themselves from the thraldom of sex dominance, honestly and sincerely sought such expert help.

Inability to deal constructively with birth control brought in its wake the nemesis of the social evil of abortion. Here was another matter which cried out for full examination and advice. The anomaly which allowed the well-to-do to get rid of the unwanted child before it was born, without danger to life or reputation, yet denied such relief to the poor, was a stigma to which society was at last awakening.

Euthanasia

The subject of euthanasia was an old and recurring one, and more was likely to be heard of it in the immediate future. To many who discussed it the problem seemed simple, but to those who were brought into daily contact with the facts there was no problem more difficult.

Whose life should be terminated? And by whose decision? At what level of congenital defect, physical or mental, should the line be drawn? What diseases were to be regarded as incurable, and at what stages in them should the cup of Lethe be drunk? Was the patient's judgement to be relied upon, warped as it often was, whether by the malady or the treatment? How could it be known that his mood was permanent? How was the calculated decision of a man's intelligence to be distinguished from the cry of strained emotion for relief? It had to be recognized that the request to end suffering by ending life was not always the cry of a spirit stricken past endurance, but rather the dramatic demand of someone whose patience, never too good, was now exhausted. Finally, when the demand to end life was made on behalf of someone else, it was often not the patient, but the patient's friends who could not stand the strain. "Doctor, you must end this agony!" said a woman to him recently, and his reply, "Do you mean yours or your husband's?" brought home to her, rather sharply, the real position. The inalienable right of another person to live, if he so desired, had been entirely forgotten. "I am sure he does not want to live" might well mean, "I do not think I can possibly see him suffering any longer."

These were some of the considerations which must be advanced when they as medical men were approached by laymen who believed that the institution of euthanasia of the direct kind would be of benefit to humanity. In his judgement, this was the one subject upon which, though their experience should be available to guide the decisions of others, they ought not to express strong views. Their whole training and outlook were directed towards the prolongation of life and the relief of pain, and while they had to distinguish prolongation of life from prolongation of the act of dying, he thought the larger decision should be left to the developing good sense and judgement of the community, whose servants in such a matter they really were.

Duty of Medicine to Society

After the briefest reference to other matters, including voluntary sterilization—the Brock report deserved the most careful study—the drink problem, food problems, industrial fatigue, and the campaign against unnecessary noise, Lord Horder went on to deprecate any aloofness of medicine from questions that affected social groups or society in general, and ultimately determined the general welfare and happiness. Morals, in the sense in which he had used the term, were constantly changing, and medicine could guide or even to some extent control those elements in the mosaic which concerned its own art and science, or it could remain detached and let society take care of itself. If, as he thought desirable, and indeed incumbent, the former alternative were adopted, then it was essential that the examination of these elements and guidance concerning them should be undertaken by representative bodies in medicine, rather than merely by individuals. Pooled opinion was much more useful than the expression of personal views. Moreover, the limitations imposed upon the individual by the traditions of medicine were severe, and rightly so. In the first place, no amount of publicity of itself conferred prestige upon the doctor, though it was perhaps wise to admit in these days that prestige could not be attained without some degree of publicity. Again, no medical man, however expert in his own sphere, could take upon himself the responsibility of standing for the general body of medical opinion; indeed, in respect of the things he had been considering, the very fact that a man was an expert might be a danger.

It was to his colleagues assembled in council that the individual, stirred to a protest or eager for a reform, should address himself in the first instance. Convinced himself, he was not likely to fail in convincing them if his case was a good one. He could thus secure the powerful aid of their corporate influence. So it should be with matters submitted by various sections of the public or by Government—for even Government sometimes, and quite sincerely, sought the way of salvation: it was to representative and authoritative bodies inside medicine, and not to individuals, that these inquiries should be directed. But where were the representative and authoritative bodies? The Society he was addressing, like its vigorous offset, the Royal Society of Medicine, existed for academic discussions. The British Medical Association was a body most admirably suited to guard the status and amenities of its vast membership, but this function being apparent and accepted, it was reasonable that it should be suspect when matters of public interest were being ventilated. It was true that in the last analysis the public interest and the interest of the doctors were identical, but this last analysis must not be assumed as being made by those who were vitally concerned in the direction of social morals. Some would say that this was the sort of thing that might be adequately undertaken by certain health societies which had on their committees both doctors and laymen. But in the discussion of medical topics he distrusted such mixed bodies thoroughly. How could people confer with any expectation of a helpful issue if they did not speak the same language? There remained the Colleges, strong and representative bodies. Together the Colleges might voice a solidarity of opinion on any question arising within their walls or submitted to them from outside, and no impeachment on the ground of bias or parochialism could possibly be advanced. Against the Royal College of Physicians there was formerly lodged the reproach that it isolated itself from important outside affairs which cried aloud for the guidance of medicine, and the stigma was not unmerited. The present President of the College (Lord Dawson of Penn) was to be congratulated upon the efforts he had made to remove that reproach. His invitation to discuss certain matters of general interest to the public in comitia showed that he was alive to one of the chief functions of the College, and the setting up of a committee whose sole reference was to keep the College in touch with outside affairs which had medical bearings was a most laudable action. The recent decision of the Presidents of the two older Colleges to discuss disciplinary matters and penal cases in joint council was an advance in another and equally important direction. Whilst individually the Colleges were strong, they would more than treble their strength and their public influence if there were a closer liaison between them. Indeed, apart from acting in concert concerning examinations, the liaison scarcely existed. At present there were risks of divergence of opinion, and there was duplication of discussion. A closer union was much to be desired. Lord Horder closed by suggesting the idea of an Academy of Medicine in this country, of which the Colleges would be the main pillars. He again quoted Clifford Allbutt: "If a social discipline and fruition are to be renewed and enlarged, it must be upon a new synthesis as laborious and ardent as the former, and more true. . . . Swiftness and strength come of union of wills and singleness of heart rather than of wisdom."

At the close of the address a vote of thanks to Lord Horder was carried on the proposition of Mr. Warren Low, seconded by Dr. Walter Carr. Earlier in the evening the Society had taken leave of its retiring president, Sir John Thomson-Walker, to whom also a vote of thanks was passed. Some handsome new seating accommodation in the meeting room is Sir John Thomson-Walker's gift to the Society to mark his year of presidency.

F. Deak (*Thèse de Paris*, 1934, No. 535) states that in contrast with other districts in Rumania, in the delta of the Danube malaria is insignificant both in number and in gravity. The explanation for its infrequency is to be found partly in the preference shown by the anopheles for the cattle and partly in a relative immunity, combined with an excellent general condition of the population. The eastern part is almost entirely free from the disease, the average endemic incidence sometimes not exceeding 0.4 per cent. among 2,000 children up to the age of 15, as compared with 14 per cent. in the Tulcea area, at the apex of the delta.

CORRESPONDENCE

Publicity

Sir,—From time to time you publish in your correspondence columns and elsewhere indignant protests from practitioners whose articles have been quoted by the lay press, and who wish to repudiate any responsibility for their appearance. I wonder if there is any advantage in such disclaimers. Those who are familiar with the professional status of their colleagues require no such assurance. Others acquainted with the methods of journalism are perfectly well aware that no precautions can prevent these occurrences. And a tiny minority who might be willing to accuse your correspondents of seeking publicity or notoriety may even interpret the disclaimer as corroboration of the original intention! In any case nothing can prevent the lay journals from quoting from your columns, extracting the relatively dramatic, and unhappily, on occasion, misquoting and misrepresenting. For the author of the original article to protest is obviously useless. Is it too much to say that not only is it useless but it is quite unnecessary?

There is another aspect of this subject to which reference may not be inappropriate. The interests of medical men are not by any means restricted to their professional life, and there are certain outside activities upon which they are, rightly or wrongly, regarded as authorities, and upon which their opinion is considered to be correspondingly desirable. From their familiar association with the use of the telephone doctors are particularly fair game for attack through this convenient but highly dangerous medium. And once your ear is at the instrument and your arrival admitted, and you are inveigled into saying something, no matter what, the mischief is done. If, good-naturedly, you believe you may be doing a service to the public—and that really is the motive on most occasions—publicity is inevitable. The most fervent request to withhold your name is unlikely to be respected, since any news value attaching to the opinion of one who is being represented to be an authority depends entirely upon his name being mentioned. Alternatively, a curt refusal may rebound upon you to your subsequent discomfiture, and those who have once suffered in this way have learnt that it pays to be courteous.

At midnight a few weeks ago the news editor of one of the daily papers felt unable to rest until he had telephoned to take my opinion upon a "story" just to hand from South Africa: an indignant protest against holding Olympic Games for women because there was abundant evidence that some men had actually competed. It says something for my forbearance that my only observation, even at this hour, was that I knew absolutely nothing about it. Yet this became ingeniously interpreted as an authoritative denial of the rumour. A week later—again at the (apparently critical) hour of midnight—I was approached by another journal in reference to an inquest that had been held that afternoon, at which the coroner had expressed his opinion that the suicide of some unhappy young man was due to his "having lived too strenuously." "Did I think the coroner was right?" and "What did I suppose the coroner meant?"

It may be that some of us might succeed in fencing ourselves round by a complete secretarial inaccessibility (more appropriate, perhaps, to a Pope than to a medical man), and thus receive adequate protection from telephonic assault. But by the time we had acquired an eminence commensurate with such a state we should be "in the news" anyway.—I am, etc.,

London, W., Oct. 8th. ADOLPHE ABRAHAMS.

Is High Blood Pressure a Risk?

Sir,—In your issue of August 25th "M.S., F.R.C.S." appears to call for a review of the vast amount of work written on high blood pressure. The cases to which he makes reference appear to cast a cynical doubt on the now recognized fact that, as a rule, high blood pressure certainly carries with it a risk which, to our shame it must be admitted, has been seriously overlooked since Clifford Allbutt drew attention to this disorder. The condition, according to Fahr, claims 10,000,000 afflicted in America, and 200,000 deaths a year—an incidence as common as cancer and tuberculosis together; according to Parkinson it is a "very common disease, which is responsible for so much suffering and mortality in late middle life and early old age." I can endorse Parkinson's observations even more strongly from my experience in this country, where the ravages of rheumatic fever are not so prevalent as in the West, and therefore show up hypertensive failures more readily.

One is tempted to ask: Has "M.S., F.R.C.S." met no other cases of high blood pressure? If he has not he is an extremely lucky medical man. If he has met many cases with such high diastolic pressures, surely there must have been many with serious complications. I have had several friends and many patients with diastolic pressures of 170; very few indeed are alive. I have seen four cases which had systolic pressures of over 300. These could not be recorded, as the manometer only read up to this figure. The diastolic pressures in them were over 160. All these patients were over 60 years of age, and until a short time prior to a fatal issue had nothing more than the mildest general symptoms. One patient of mine, 68 years old, apparently in good health, had a systolic pressure of 210 and a diastolic of 95; another, a lady, a systolic of 300 and a diastolic of 90. These striking exceptions, and many more like them, have not made me cease to believe that high blood pressure, particularly when it occurs under 50 years of age and once any symptoms are manifested, is a danger to life of which some kind of notice should be taken.

An account of the numerous strokes which appear in these cases is given in my Sir Charles Hastings prize essay on "The Stroke in High Blood Pressure," published in the *British Medical Journal* of January 30th, 1932.—I am, etc.,

General Hospital, Colombo, Ceylon, Sept. 22nd. H. O. GUNEWARDENE.

Preliminary Ligature in Toxic Goitre

Sir,—The correspondence concerning preliminary ligature in toxic goitre has probably continued long enough for adequate ventilation of the different opinions that are held. An excellent summary of the position was supplied in your issue of September 29th by Sir W. I. de Courcy Wheeler. I cannot, however, remain silent in view of the repetition by Mr. G. Bankoff in your last issue of the astonishing and dangerous fallacy that the degree of the reaction depends, not on the amount of thyroid tissue that is removed, but on how much is left behind. If this were true, the only logical inference would be that the lowest mortality rate would be obtained by performing a total thyroidectomy in all the worst cases. This is contrary to clinical experience, and the principle would be most dangerous if generally applied. I fully agree with Mr. Hawe and Mr. Bankoff that "for the good success of the operation it is imperative to remove at least three-quarters of the gland," and in fact I frequently remove more than this. In the great majority of patients it can be done in one operation, but in a

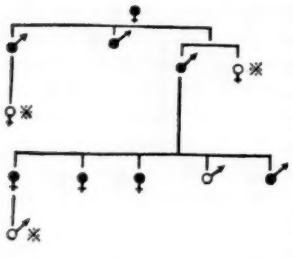
small minority it must be done in stages. The patient's reaction depends, in my opinion, on the amount of disturbance to which she is subjected, and that is why operation in stages, including preliminary ligature, is occasionally necessary. This procedure is reserved for those patients who are most seriously ill, so that it is no matter of surprise if sometimes one of them dies as the result even of the most cautious surgery. In some clinics patients who are as ill as this are not subjected to surgery at all, and perhaps some in consequence die who might have been saved. Their deaths then appear, however, in medical, not surgical, statistics. Unless we are shown both sides of the picture our data are really incomplete.—I am, etc.,

London, Oct. 8th. GEOFFREY KEYNES.

*** This correspondence is now closed.—ED., *B.M.J.*

Female "Bleeders"

SIR,—The case of a female bleeder recorded by Drs. M. A. Foulis and J. W. Crawford in the *Journal* of September 29th (p. 594) prompts me to send you the genealogical tree of a very similar family, most of whom live in this town. I cannot trace it back any further than the grandmother of the present family, who is assumed by her descendants to have been a bleeder because she died from uterine haemorrhage the day after giving birth to the twins shown. I have put a star against three members of the tree, because I have been unable to find out whether they are bleeders or not. One of these died as a child of 12, one lives far away, and the third, a sturdy boy of 14 months, has so far been preserved from cuts and scratches. My partner, Dr. Mary MacLaren, attended the eldest daughter at her confinement last year. She had previously dosed her liberally with calcium gluconate and laevulinate, and informs me that at the confinement there was a rather profuse loss, followed by a more severe haemorrhage three days later. Otherwise the women did well. One of her sisters had a very troublesome appendix two years ago. This we removed without untoward incident after a preliminary intensive treatment with calcium gluconate and a dose of haemoplastin.



The bleeding in this family is of a severe character. All the members marked with black dots suffer from fairly frequent epistaxis, which may last for several days. A cut or a tooth socket seldom stops bleeding within twenty-four hours, and several times haemorrhage has kept on for a full week. I cannot give the clotting time for the blood, partly because I seldom treat the family, and partly because the only attempt I have made to time it failed. The blood seemed to be quite fluid after standing for an hour, and then I had to leave it. My own blood, which I had put up as a control, had clotted within three minutes. According to the mother's statement the bleeding in her four children started in infancy. She makes a curious statement about her eldest daughter to the effect that she bled from the mouth about the same time every month until she was 2. While this is difficult to believe, she says that the periodicity was so marked that she could not mistake it.

The family tree I give is unfortunately very small, but, such as it is, it shows conclusively that in this family at least bleeding is not a sex-linked character, and suggests that it is almost a Mendelian dominant.—I am, etc.,

Winsford, Cheshire, Oct. 6th. W. N. LEAK.

Evipan on a Full Stomach

SIR,—With reference to the point raised by Dr. Langton Hewer, commenting on our recent paper on evipan anaesthesia, we entirely agree with him that the administration of evipan or any general anaesthetic when the stomach is overloaded may be a dangerous procedure.

We do not consider that any suggestion to the contrary was either made or implied in our article. Our statement was: "Evipan may be given without danger on a partially full stomach." In such circumstances, in a healthy subject the danger of syncope is remote, and, owing to the nature of the anaesthesia, there is practically no risk of stomach contents entering the respiratory passages. In the example quoted the patient had taken a light tea only, and had the wording of the text been "the patient recently had a light meal" instead of "the patient recently had a meal," perhaps our meaning would have been more evident.—We are, etc.,

Royal Westminster Ophthalmic Hospital, W.C.2, Oct. 5th. T. KEITH LYLE. F. G. FENTON.

Control of Haemorrhage in Prostatectomy

SIR,—One serious complication of endoscopic resection of the prostate is haemorrhage and clot retention in the bladder. The haemorrhage cannot always be arrested by diathermy and fulguration at the time of the operation, nor can it always be controlled by the pressure of a retained large catheter. Irrigation with silver nitrate merely converts a soft clot in the bladder into a hard one, which often necessitates an open operation for its removal. To obviate the disadvantage of haemorrhage and clots I have recently in all cases tied in two catheters, one large and one small. Continuous irrigation is given, the inlet being the smaller catheter. The fluid used is 5 per cent. sodium citrate. This prevents clotting, and the catheters are seldom required after forty-eight hours. Instead of two separate catheters a double-channel catheter may be used. These are made by the Genito-Urinary Manufacturing Company. I strongly advise continuous irrigation as the initial after-treatment following endoscopic resection of the prostate.—I am, etc.,

London, W.1, Oct. 2nd. F. McG. LOUGHNANE.

Traumatic Rupture of the Lungs

SIR,—Dr. W. E. Cooke's paper (*Journal*, October 6th, p. 629) on traumatic rupture of the lungs without signs of trauma of the chest wall is of great interest to me, as it recalls a case which occurred in my own practice some years ago, and which has been puzzling me ever since. In the Southern Argentine, where I practised for a few years before the war, I was called one morning to see a policeman who had just been brought down from the country, having been in a rough-and-tumble the evening before with some prisoners he was escorting to the coast. When I saw him he was in a very serious condition, and I found on examination that there was an incised wound on the right chest in the mid-axillary line. There was complete dullness from the right clavicle downwards, and all the signs of a serious right haemothorax. I went back to my house to fetch some instruments, meaning to do a preliminary aspiration, but when I returned soon afterwards the man was dead. I did a necropsy by order of the local judge, and was surprised to find that, first, the wound had never penetrated the chest wall; secondly, that the ribs and the parietal pleura were perfectly intact; and, thirdly, that the whole of the right pleural cavity was filled with blood and broken lung debris. Nothing of the right lung remained except

a torn, jagged root ; all the lung substance proper had vanished. The left lung, heart, and abdominal viscerae were intact.—I am, etc.,

Kirk Michael, Isle of Man, Oct. 9th. E. G. Fenton.

Tuberculin

Sir,—A letter published in your issue of September 29th (p. 612), by " M.B., D.P.H.," is a most valuable and interesting human document. Might I suggest that this doctor reads an article written by Dr. J. R. Gillespie, tuberculosis officer for County Down, and published in the *Ulster Medical Society's Journal* of 1917, on a rational method of using tuberculin. Your correspondent will there see the reasons for the reactions which he obtained.

Experiments show that in about 95 per cent. of animals tested with tuberculin a positive reaction indicates the presence of living germs in the animal's body. Though *x*-ray examination may have failed to disclose any evidence of pulmonary tuberculosis in your correspondent's case, yet the reaction he obtained proves conclusively that he is harbouring living tubercle bacilli. —I am, etc.,

Nordrach-upon-Mendip, Oct. 2nd. Gordon Tippett.

Minor Medical Problems

Sir,—I am venturing to write to you about two small but interesting matters.

First, I wish to draw attention to the bad results I have had recently after the administration of potassium iodide. In one case, that of a male aged about 35, perhaps of rather a " neurotic " disposition, only 3 grains of potassium iodide were given, but within twelve hours his face had become swollen and his eyelids were oedematous. A friend of mine, a member of the medical profession, noticed that after taking 5 grains three times a day his neck and cervical glands were so swollen that he could not put on his collar. My former house-surgeon at Guy's Hospital reports two severe cases of nasal discharge and septic eruptions following upon the administration of small doses of potassium iodide.

Secondly, I wish to draw your readers' attention to the rather anomalous nature of the so-called " boil " during the last twelve months. In all the cases that I have seen or heard of recently apparently no definite slough occurred. In two cases a purulent discharge lasted a very long time —namely, eight weeks or so—without any core being formed or extruded. One of these cases terminated fatally from meningitis.

Doubtless the action of drugs and the reaction to disease may vary from time to time, but potassium iodide is a drug which is frequently given, and the formation of a boil is a common condition: it would be interesting and instructive to know of other medical men's experiences.—I am, etc.,

Ralph Thompson, Ch.M., F.R.C.S.

London, W., Oct. 8th.

"Port Sanitation and Common Sense"

Sir,—The letter of " M.D." (*Journal*, October 6th, p. 658) calls for a reply, for which I would crave your space and tolerance.

The main purpose of my article was to draw attention to the anachronistic nature of present-day port sanitation procedures, especially those of the Latin countries. I did not for a moment claim that any ship surgeon should be regarded as endowed with medical omniscience, only that he should not be treated as happens in many foreign ports, as an ignoramus in respect of medical knowledge. The cases which " M.D." mentions are admittedly difficult, and I for one would be only too pleased to have assistance in their diagnosis ; but they are exceptional cases, quite different from the everyday minor illnesses which occur among human beings everywhere, ashore or afloat.

His assertion that infectious disease might break out on board during the twelve hours' transit of the Suez Canal is so *very* improbable as to verge on the fantastic. The health authorities of the Panama Canal zone are experts at their job, yet they require a declaration only at *one* end of that canal—the Atlantic for west-bound ships, the Pacific for east-bound. The case which he mentions of concealment of small-pox must in itself be anachronistic. I feel perfectly certain that no British ship surgeon (still in his senses) would nowadays attempt to conceal a case of small-pox, or even one that remotely suggested it. He would be only too glad to have it removed from the ship.

There certainly cannot be a multitude of forms, but there can be a variation in the attitude of the port doctor. He need not necessarily treat every ship surgeon as a medical ignoramus, and probably a liar in addition.—I am, etc.,

October 6th. Ship Surgeon.

⁂ This correspondence is now closed.—Ed., *B.M.J.*

The League and Peace

Sir,—Your annotation—" Cheese-paring at Geneva " (September 29th, p. 602)—cannot be read without arousing the deepest indignation at the indifference of the official mind to the common welfare. This indignation calls for expression ; but how? Personal protest is useless, and political protest, because of the complexity of election programmes, is ineffective. There is, however, one course which should command the support of all. A way should be found for those who have the maintenance of peace at heart to unite to send an annual voluntary contribution directly to the League of Nations at Geneva. This would be additional to the sum of one penny and one farthing per head found with such difficulty by the British Government. Someone must take the initiative. Will the British Medical Association, as a professional body whose concern is our individual good health, therefore invite the representatives of other professional and also religious and social bodies to confer on the best means of making this proposal effective? In this you would have the earnest thanks of millions to whom one penny and one farthing is a tragically laughable price to pay annually for protection against war and for the encouragement of the arts of peace.—I am, etc.,

London, S.E.24, Oct. 2nd. W. J. Wisdom.

The Services

NO. 14 STATIONARY HOSPITAL DINNER

The fifteenth annual dinner of the medical officers of No. 14 Stationary Hospital will be held on Friday, December 7th, at the Trocadero Restaurant, Piccadilly, at 7.15 for 7.45 p.m. Colonel C. R. Evans, D.S.O., will be in the chair. Price of dinner is 12s. 6d., exclusive of wines ; evening dress or dinner jacket. The honorary secretaries are Colonel H. M. Perry and Dr. H. L. Tidy, 39, Devonshire Place, W.1.

DEATHS IN THE SERVICES

Surgeon Commander Archibald Denize Spalding, R.N. (ret.), died in London on September 10th. He was educated at the London Hospital, taking the M.R.C.S., L.R.C.P.Lond. in 1901, after which he entered the Navy, becoming surgeon commander on February 2nd, 1916. He served throughout the war of 1914–18.

Obituary

J. P. A. GABB, M.D.

Consulting Medical Officer, Royal Surrey County Hospital, Guildford

Dr. J. P. A. Gabb, who died on September 18th, was the son of Dr. John Gabb of Bewdley, Worcestershire, and was educated privately at Clifton and later at University College, London, where he graduated, taking the M.B.Lond., with honours, in 1879 and the M.D., with honours, in 1882—the year in which he went to Guildford. He had also obtained the M.R.C.S.Eng. in 1879, and was awarded the gold medal for surgery and the silver medal for medicine. Dr. Gabb held the following appointments: honorary consulting medical officer to the Royal Surrey County Hospital; honorary medical referee to the Royal National Hospital for Consumption at Ventnor. He was president of the Surrey Medical Benevolent Society, and a Fellow of the Medical Society of London. He had been resident medical officer of St. Marylebone General Dispensary, house-surgeon at Kidderminster Infirmary, and house-surgeon and house-physician at University College Hospital. He was a member of the British Medical Association for fifty-two years.

H. B. B. writes: Dr. J. P. A. Gabb's death is an irreparable loss to his many friends; none of us now left in practice can remember a time when he was not there to be consulted in case of need—for he practised in Guildford for more than fifty years. He was a tower of strength to his junior colleagues—who consulted him freely—not only in purely medical matters, but in almost every concern in life that can affect medical men. His advice was always inspired by wisdom, often spiced with humour, and was given in such a friendly spirit that even when it was the reverse of that hoped for by aspiring youth it was comforting: hall-marked by reason. He was a shy man, very quiet and reserved, but his illuminating smile was celebrated. I have heard it said, rather enviously, that he owed his enormous practice to this smile, and I am open to believe that it contained healing properties, as an adjuvant to his vast experience and distinguished medical acumen and knowledge. His general practice was of the best kind, and included every class of society—and both rich and poor. All his patients were his friends, and they all loved him. There must be a very large number of people who will never regard any other doctor, however good, as "the doctor" in the same sense as they regarded Dr. Gabb. They could always rely upon him, and his mood was always the right mood. He was both generous and charitable. Dr. Gabb was a tall, handsome man, very strong, and in his prime, which lasted nearly to old age, he was untirable. He had little time for sport or recreation, but he loved his garden and his pigeons.

JOHN MACAULAY BOWIE, M.D.

F.R.C.S.Ed., M.R.C.P.Ed.

The death took place suddenly in Edinburgh on October 5th of Dr. J. M. Bowie, a well-known medical practitioner of the city. He was taken ill while driving his car, but was able to draw in to the side of the road; when he was carried into an adjoining office life was found to be extinct. Dr. Bowie, who was born in 1874, took a medical course at Edinburgh University, where he graduated M.B., Ch.B. in 1898, proceeding to the M.D. in 1901. In 1902 he joined the Royal College of Physicians of Edinburgh as a Member, and took the Fellowship of the Royal College of Surgeons, Edinburgh, in 1903. After a period as resident physician with the late Sir Byrom Bramwell in the Royal Infirmary, Edinburgh, he acted as house-physician at Monsall Fever Hospital, Manchester, and as clinical assistant in the nose and throat department of the Royal Infirmary, Edinburgh. He later began practice in the Grange district of Edinburgh, where he enjoyed the confidence of his wide circle of patients to an unusual degree. In his student days Dr. Bowie took a keen interest in the Royal Medical Society of Edinburgh, of which he was honorary secretary, and he continued to devote himself to various professional organizations in later life. He was thus an active member of the British Medical Association; on several occasions he was a representative at the Annual Representative Meeting, and in 1930–2 was chairman of the Edinburgh Division of the Association. At the time of his death he was chairman of the Edinburgh Panel Committee, a member of the Scottish Committee of the British Medical Association and of the Edinburgh Insurance Committee, and chairman of the Clinical Club, a social organization for general practitioners in the city. He assisted in the organization of the Public Medical Service for Edinburgh which has just been started. During the war Dr. Bowie was medical officer to the 9th Royal Scots, and served with the rank of major in the R.A.M.C.(T.) in France, where he was severely wounded. For his services in France he received the Croix de Guerre. After his return he limited his practice to some extent, and removed to 10, Walker Street, Edinburgh.

Dr. Bowie is survived by a widow, two sons, and two daughters. Mrs. Bowie is well known for her activities in the nursing world, being connected with several nursing publications and an Associate of the Institute of Journalism. A memorial service held on October 8th at St. Cuthbert's Parish Church, Edinburgh, where Dr. Bowie was an elder, was attended by many representatives of the medical profession. The interment took place in the Dean Cemetery, Edinburgh.

D. L. FISHER, D.S.O., M.B., C.M.

Lieutenant-Colonel R.A.M.C.(T.)

Dr. David Leonard Fisher, who died on October 3rd at Darlington, was born on May 23rd, 1870, in Belfast, and studied medicine at Edinburgh University. He graduated M.B., C.M. in 1897, and after holding the post of demonstrator in anatomy for a time, was appointed house-surgeon to the Mildmay Hospital, Bethnal Green. He then practised in Stockton, and met his wife, a daughter of the late Mr. George Mellor, a member of the Stockton Council, and, accompanied by her, he went to Manchuria to take charge of a mission hospital until the Boxer rising. Returning home, he established himself in practice in the rapidly growing north end of Darlington, and afterwards in partnership with Dr. C. J. Kirk, taking part in all progressive work—first aid, St. John Ambulance, Territorial training, and later, service to the municipality of Darlington as a councillor in 1909, chairman of the Library Committee, and alderman in 1926, when he was elected chairman of the Health Committee. In 1921 he was appointed a justice of the peace.

Dr. Fisher had a most distinguished military career. Amidst a very busy practice he found scope for his illimitable energies in the Territorial Service in 1908, and at the outbreak of war was a captain of the 2nd Northumbrian Field Ambulance. Mobilized in August, 1914, he went to France in December with the 30th Division, having been in the meantime promoted major whilst stationed in camp at Gateshead. At the end of 1915 he was transferred to Salonika, where his brilliant self-devoting services and organization of field hospitals in the Struma and Vardar won him his lieutenant-colonelcy in 1916. He continued to serve midst all the trials of malaria, dysentery, and cholera in the East until his return to

civil life in 1919 with the rank of lieutenant-colonel. His war honours included mention in dispatches three times, the award of the D.S.O., and the decoration of an Officer of the Legion of Honour from the hands of the President of the French Republic.

In 1933, following the distressing event of the loss of two mayors in four months, Dr. Fisher was unanimously elected mayor of Darlington, and though still feeling the strain of those past years, so typical of his life, he manfully accepted the responsibility, and guided the council through a most difficult period in its history. He also held the appointment of police surgeon and medical referee to the War Pensions Committee. Always progressive, he was largely instrumental in forcing the pace in Darlington in the fight against tuberculosis in 1912, in the conversion scheme from privy middens to water carriage, in founding a museum, in replacement of noisy clanking tramways with trackless rubber-tyred buses, in modernizing water supplies, and finally in the co-ordination of medical services under the Local Government Act, 1929, when the whole of the council's activities were centralized under practically one roof, convenient to the new Memorial Hospital. Dr. Fisher joined the British Medical Association in 1903, and was chairman of the Darlington Division in 1925–6. He never made it his aim to amass money, but rather set himself to help his fellow man in whatever way he best could use his talents. His criticisms of colleagues were of the kindliest nature. Always patient, always eager to believe the best, a true sportsman, he endeared himself to his friends and soon won over his opponents—if he ever had any.

A public memorial service was held at St. Cuthbert's Parish Church on October 6th, when a large congregation, consisting of the mayor, corporation, chief officials, and representatives of many organizations, paid their last tribute to a gallant soldier and a very faithful citizen. He leaves a widow and four daughters, two of whom are married, one to Dr. John Clarke (Coventry), and the other to Dr. James Robertson (Hull).

We have to announce with regret the death of Dr. G. A. F. Heyworth of Belper, one of the best-known medical practitioners in Derbyshire. During a hockey match, while playing for Belper against Beeston, he suddenly collapsed and died soon after admission to the Nottingham General Hospital. George Alexander Frederick Heyworth was born in 1881. From Rugby he went to Trinity College, Cambridge, and continued his medical studies at the London Hospital, obtaining the M.R.C.S. and L.R.C.P. diplomas in 1907, and subsequently the degrees of M.A., M.B., B.Ch. at Cambridge. While a student he played hockey for Cambridge University, and later for Lancashire. After a period as house-surgeon to the Children's Infirmary, Liverpool, he began general practice at Belper in 1909. He was a member of the British Medical Association (late chairman of the Derby Division) and of the Derby Medical Society, and among other interests he identified himself with the work of the local ambulance corps and of the Derby Branch of the Church Missionary Society. Dr. Heyworth's standing among his colleagues was shown by his election to both the Derbyshire Insurance Committee and the Derbyshire Panel Committee, and of the latter body he was at the time of his death vice-chairman and honorary secretary; he was also chairman of the Derbyshire Health Week Committee. Dr. H. W. Pooler writes: "A modest, charming, unassuming personality, Dr. Heyworth will be much missed by his colleagues on the Panel Committee. As one of the honorary secretaries of the joint ante-natal committee of the Derbyshire Branch Council of the British Medical Association and the Panel Committee, he was conducting negotiations with the Derbyshire County Council for the greater co-operation of general practitioners in ante-natal work throughout the county." A London consultant writes: "As a friend and companion of some forty years' standing I would esteem it a privilege to be permitted to add a few words of tribute to the fine character of the late Dr. George Heyworth. We were cousins, and great good friends together at Rugby School, Cambridge University, and the London Hospital, and everywhere we shared rooms and worked in intimate contact. There was never anything in his good clean life which could not be admired—his loyalty to his friends, his devotion, his keenness and enthusiasm for all forms of manly sport, his sincere and Christian character, and his very fervid interest in the profession of his choice. George Heyworth died as he would have wished to die—in the full vigour of his fruitful life—but he had not yet reached the zenith of his power, and, had he lived, a still broader vista would have been open to him. The companions of his youth and of his prime are grateful for an example so inspiring as that of the friend who has been snatched away."

We much regret to record the death, on September 22nd, of Dr. James Crawford Myers Kinnear of Wickham, Hants, after an illness lasting several months. James Kinnear was born at St. Cyrus, Kincardineshire, in 1867; and after studying medicine at Aberdeen University, graduated M.B., C.M. in 1889. He practised in Scotland for a few years, and then, in 1900, came south to Wickham. He soon made friends, and rapidly found himself in extensive country practice. He held the appointments of medical officer and public vaccinator for Southwick and Wickham, surgeon to the Post Office, and honorary surgeon to the Shedfield Cottage Hospital. Dr. Kinnear was a good shot, a rider to hounds, and a breeder of horses. In his early days he was always in the saddle, doing his rounds on horseback. In this way, although often overworked and seldom taking a holiday, he managed to keep fit. He was devoted to his patients, especially the poor: they were his friends, their troubles were his, and his generosity to them was proverbial. It is not too much to say that, although a man of strong constitution, his devotion to duty and his unselfishness shortened his life. Dr. Kinnear's passing has left a gap in the district which will be difficult to fill, and he will long be remembered as a wise physician, a kind friend, a lover of the countryside, and a keen sportsman. He married in 1911 Mary Laura Duncan of Curdridge—a most devoted wife and mother—and leaves three sons and two daughters.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

On the occasion of the visit of the King and Queen to Cambridge on October 22nd, when His Majesty will declare the new University Library open, it is proposed to confer the honorary degree of Doctor of Science upon Lawrence Joseph Henderson, M.D., professor of biological chemistry at Harvard University, and upon Karl Landsteiner, M.D., member of the Rockefeller Institute for Medical Research. The Vice-Chancellor, Mr. J. F. Cameron, Master of Gonville and Caius College, in his address to the Senate on October 1st, made detailed reference to the new University Library, with the opening of which a new chapter in the history of Cambridge begins. He recalled the part played by his predecessor, Sir Hugh Anderson, M.D., in securing for the University the great offer by the Rockefeller Foundation, and said that the Anderson Room would commemorate Sir Hugh's services.

UNIVERSITY OF LONDON

London School of Hygiene and Tropical Medicine

The following candidates have been approved at the examination indicated:

Academic Diploma in Public Health.—**Hyacinth I. Lightbourne**, F. G. Macdonald, I. A. MacDougall, Ll. Roberts.

London Hospital Medical College

The Second Open Entrance Scholarship of the value of £100 has been awarded to E. A. Pask (Downing College, Cambridge.)

University College Hospital

Three lectures on the history of medicine will be delivered at University College Hospital Medical School, University Street, W.C., on Mondays, October 15th, 22nd, and 29th, at 4.15 p.m., by Professor Charles Singer. The first lecture will be on Hippocrates, the second on Galen, and the last on Boerhaave. The lectures are open to all medical students of the University.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examination indicated:

Diploma in Public Health.—H. V. M. Jones, J. H. St. B. Crosby.

Medico-Legal

DEATH AFTER "CANCER CURE"

Inquest Jury's Rider

The Westminster coroner, Mr. Ingleby Oddie, sitting with a jury, concluded an inquest on October 1st on the body of Alice Bishop, aged 62, a Streatham woman, who died after having been under treatment for four and a half months in a home run by Mr. David Rees Evans of Finchley Road, Hampstead, a herbalist, who professed to have discovered a cure for cancer, the nature of which, however, he had not made public. It was stated that Miss Bishop had remained in the home until September 15th, when, on the advice of a qualified doctor, she was removed to a nursing home, where she died six days later, the cause of death being syncope following toxic absorption due to ulcerated carcinoma, an inoperable growth.

Evidence was given by a woman friend of the deceased as to the condition of the room in Evans's house in which Miss Bishop was a patient. She did not think it was all it might have been, and she did not consider it sufficient to change the bedclothes once a fortnight. A Hampstead medical man stated that he was called in in May to see Miss Bishop at the home of Evans, whom he did not know personally. She told him that she had been suffering from hiccup and pain, and he treated her, but she had suggested that she did not want any treatment for her cancer (of the breast) other than that given by Mr. Evans. The practitioner told her, after one or two visits, that he could not continue to see her in the house of an unqualified man.

Mr. Evans, who was cautioned by the coroner before giving evidence, said that he was 41 years of age, and a "healer of cancer." He had no medical training or knowledge of pathology. He had had four patient-boarders in his home at the same time; his charges were from two to three guineas a week for board and from two to six guineas a week for treatment. He had charged Miss Bishop seven guineas altogether. He met her first in April at a meeting where he lectured on cancer, and where six of his cured patients were present. He examined the growth on her breast, and concluded that it was an advanced case of cancer. She came to him every day for three weeks, and he painted a herbal preparation over the diseased area with a small brush. The object of the paint was to draw the cancerous growth to the surface; it was not a caustic or acid, but he refused to divulge its composition. Miss Bishop had shown some sign of improvement at first, but later lost the will to live. Mr. Evans was questioned concerning an action brought against him by a Mrs. Burrell in 1930, but he denied that the liquid on that occasion was analysed and found to be Venice turpentine.

After two women had given evidence on Mr. Evans's behalf, one of them stating that she had been cured by him of cancer of the breast, the coroner, in summing up, said that it was well that such persons as Mr. Rees Evans should know the risks they were running. Mr. Evans was completely ignorant of medicine and surgery, yet he held himself out as able to cure a disease which had baffled the whole world. If he had such a secret remedy, ought he not to hand it over to the numerous sufferers from this terrible disease? He did not do so; he kept it to himself. The result was to buoy up false hopes, and to intervene between the patients and surgical or deep-ray treatment, which were doing so much in these days.

The jury at first returned a verdict of manslaughter, but the coroner pointed out that for such a verdict to stand it would have to be proved that the treatment had either caused or accelerated death. The foreman replied that eight of the jury had said "manslaughter" and one "gross negligence." They had considered the evidence and the pain the deceased had suffered. The coroner said that pain did not necessarily shorten life. After further consultation the jury returned a verdict that death was due to cancer—that is, natural causes—accelerated by lack of treatment, and in a rider they condemned the interference and negligence of Rees Evans's treatment.

*** The case of Burrell *v.* Evans, to which reference was made in the above proceedings, was heard before Mr. Justice Charles and a jury in 1930. The jury were unable to agree on an answer to the question put to them as to whether there had been fraudulent misrepresentations and negligence by the defendant. The case was fully reported in the *British Medical Journal* (1930, i, 1024).

Medical News

The President (Dr. J. S. Fairbairn) and Council of the British College of Obstetricians and Gynaecologists have issued invitations to a dinner party to be held at Claridges' on Monday, November 5th.

A meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, October 17th, at 5.30 p.m., when papers will be read by Dr. Edwin E. Jelley and Drs. G. M. Findlay and R. D. Mackenzie.

The annual dinner of the Chelsea Clinical Society will be held at Hotel Rembrandt, Thurloe Place, S.W., on Tuesday, October 16th, at 8 o'clock. The president will receive members and guests at 7.30 p.m.

The annual dinner of the Surgical Instrument Manufacturers' Association will be held at the Holborn Restaurant on Friday, October 26th, when the principal guest will be Dr. William H. Ogilvie.

The first part of a course of lectures to be given at the British Red Cross Society's Clinic for Rheumatism, Peto Place, Marylebone Road, N.W., commences on October 18th, and will be continued on alternate Thursdays at 8.30 p.m. to December 13th. The second part of the course will open on January 3rd, 1935, and will be continued on alternate Thursdays at 8.30 p.m. until April 4th (with the exception of February 14th). All inquiries regarding the lectures should be addressed to Dr. M. B. Ray at the Clinic.

A course of three public lectures will be given by Professor L. J. Henderson of Harvard University at University College, Gower Street, W.C., on October 16th, 17th, and 18th at 5 p.m. Professor Henderson's first lecture will be on "Physiological Equilibrium," and Professor A. V. Hill, F.R.S., will occupy the chair.

The British Institute of Philosophy (University Hall, 14, Gordon Square, W.C.) has arranged a course of four lectures on the importance of a philosophy of life for mental health, for the medical profession, on Thursdays at 5 p.m. from November 1st to 22nd. The first lecture, on "The Biology of Social Life," will be delivered by Professor W. Langdon Brown; the second by Dr. William Brown on "Health, Self-determination, and Free Will"; the third, on "Creative Activity and Mental Health," by Dr. Emanuel Miller; and the fourth by Dr. H. Crichton-Miller on "Belief and Adaptation." Applications to attend the course, the fee for which is 12s. 6d., should be made to the director of studies at the Institute.

Free demonstrations of the technique of contraceptive methods will be given at 108, Whitfield Street, W.1, on November 1st and December 6th, 1934, January 3rd, February 7th, March 7th, April 4th, May 2nd, and June 6th, 1935, from 2.30 to 6 p.m. Previous applications for tickets (which will be supplied to medical practitioners only) should be made in writing to the honorary secretary, C.B.C., at that address.

Dr. R. Veitch Clark, medical officer of health for Manchester, will deliver his presidential address to the annual meeting of the Society of Medical Officers of Health on Friday, October 19th, at 5 p.m., at 1, Upper Montague Street, W.C.

The South-West London Medical Society announces a new series of lectures beginning on October 17th, when Dr Russell J. Reynolds will speak on cineradiography. All medical men are welcome at this meeting. Other lectures will be given as follows: November 14th, Dr. L. J. Witts: "Diagnosis and Treatment of Anaemia." December 12th, Discussion on anaesthesia, "Ether is not Dead," to be opened by Dr. Z. Mennell and Dr. M. D. Nosworthy. January 9th, 1935, Mr. B. Whitchurch Howell: "Orthopaedic Cases in General Practice." February 13th, Dr. Donald Paterson: "So-called Acidosis Attacks." April 10th, Dr. G. E. S. Ward: "The Failing Heart." May 8th, Mr. Terence Millin: "The Obstructing Prostate." The session will conclude with the Bolingbroke Lecture, on June 12th, by Dr. Robert Hutchison, entitled "Constitutional Medicine." Meetings are held at the Bolingbroke Hospital, Wandsworth Common, S.W.

The fifth centenary of the foundation of the University of Catania will be celebrated from October 19th to 22nd.

A series of post-graduate lectures will be given at Ancoats Hospital, Manchester, on Thursdays at 4.15 p.m. from October 18th to December 13th inclusive.

The Fellowship of Medicine, 1, Wimpole Street, W.1, announces that lecture-demonstrations will be given at 11, Chandos Street, W., at 2.30 p.m. on October 16th and 23rd. Courses of instruction include week-end courses in clinical surgery at the Royal Albert Dock Hospital on October 20th and 21st; and in diseases of the chest at the Brompton Hospital, on October 27th and 28th; a fortnight's course in gynaecology at the Chelsea Hospital, October 22nd to November 3rd; a week's course in neurology at the West End Hospital for Nervous Diseases, October 29th to November 3rd. Cases will be demonstrated at the National Temperance Hospital, Hampstead Road, at 3 p.m. to-day (Saturday), October 13th. A course of lectures on diet and dietetics will take place on Wednesdays at 8.30 p.m. at 11, Chandos Street, W., from October 24th to December 12th. The first will deal with general principles of dietetics, and will be followed by diet of infants, of the diabetic, of the obese and thin, for convalescents and aged, in deficiency diseases, in the nephritic, and in gastric diseases. Courses and clinics are open only to members and associates of the Fellowship.

At a meeting of the Académie des Sciences in Paris on October 2nd, Dr. Nicolle, director of the Pasteur Institute of Tunis, gave an account of recent investigations by his collaborator, Dr. Joan Laigret, into the mechanism of immunization against yellow fever. In the course of three months more than 3,000 persons have been inoculated against yellow fever in French West Africa, and the results have been so satisfactory that the authorities have decided to make vaccination against yellow fever compulsory.

The Hanbury memorial gold medal of the Pharmaceutical Society of Great Britain has been awarded to Dr. George Barger, F.R.S., professor of chemistry in relation to medicine in the University of Edinburgh. This medal is for "high excellence in the prosecution or promotion of original research in chemistry and the natural history of drugs."

The second Italian Congress of Industrial Medicine will be held at Turin from October 20th to 23rd.

A new apparatus for the treatment of cancer by high-voltage *x* rays has been given to the Birmingham General Hospital by Sir Herbert Austin, who has also provided the building which houses it, at a total cost of £4,000.

The issue of *Paris Médical* for September 22nd is devoted to psychiatry.

Professor P. Nobécourt has been elected president of the Société de Pédiatrie of Paris.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Localized Flushing

"H. H. B." writes from Lancashire: I should be much obliged if any of your readers could offer suggestions as to appropriate treatment in the following case. A young unmarried woman, aged about 20, suffers from patchy circumscribed areas of flushing on very slight provocation, chiefly on the face, neck, and upper chest. Her general health is good, her only complaint being a certain degree of simple anaemia, which responds readily to treatment with iron preparations. She is not a particularly nervous type either. I presume that the cause must be some disturbance of the vasomotor mechanism.

Treatment of Erythema Annulare

"S.O.S." writes: I shall be most grateful for advice regarding a patient who gets frequent recurrent attacks of erythema annulare. The rings vary in size; they only come on the outside of the thigh (right); irritation is great, and treatment—external and internal—is a failure. A friend suggested to the lady to use a cloth soaked in hot water to slap the part. This she does, and it is the only application that gives temporary relief from the terrible itching. Calamine lotion with carbolic acid does help a little at times, but the rings return. A sister has had chilblains which nobody can cure. Another sister gets erythema nodosum, which has baffled doctors galore.

Diuresis in Case of Pituitary Tumour

Dr. T. MACCARTHY (Sherborne, Dorset) would like to know if an explanation can be given as to the source of the fluid excreted by a case of pituitary tumour in which the patient over a period of four months has passed an average of 240 ounces daily, her average intake not having been more than 80 ounces from all sources, and often less than 60 ounces daily. Meanwhile she has lost no weight. It appears to be a mystery where the fluid comes from. Does she absorb it from the air? I can think of no other answer. She is not very thirsty, and shows no signs of dehydration.

Income Tax

Retirement from Foreign Practice

"R. S." is carrying on a practice abroad, and proposes to sell it as from April, 1935, and return permanently to this country. His income then will consist of (1) dividends on investments, (2) war disability pension, and (3) probably proceeds of locumtenent work. On what basis will he be assessed?

*** (1) In so far as they are not taxed by deduction, on the basis of the yield of the investments in the previous year—or the current year for 1934–5. (2) No liability to tax. (3) On the current year's earnings, except that if

"R. S." does that sort of work for two or three years he will probably be assessed on the previous year's basis, except for the first year.

Compensation for Loss of Office

"Hopeful" is in receipt of compensation for loss of office paid quarterly. Is it liable for payment of income tax, and, if so, is it regarded as earned?

⁂ A lump sum by way of compensation would not be liable to tax, even if by arrangement paid in instalments. But the sums received in this case are apparently quarterly payments for an indefinite period, and would seem to be more in the nature of a pension. In that case they are liable as earned income.

LETTERS, NOTES, ETC.

A Case of Erythroedema

Dr. J. A. Moore Hall (Shotts, Lanarkshire) writes: I was recently called to see a female child, aged 13 months. For several weeks the mother noticed that the little patient was becoming very restless and irritable. Naturally, she attributed the condition to dentition. However, when the greater part of the night's rest was broken by the crying of the baby, she thought it time to consult the doctor. On examination the patient's hands and left foot were found to be swollen and red and cold to the touch. This was accompanied by profuse perspiration and marked photophobia. There was loss of appetite and weight, together with constipation. The pulse was accelerated, but the temperature was found to be, and remained, subnormal. The urine was free from albumin. There was no evidence of rickets. A day or two later a very irritable sweat rash appeared on the neck and body, but this condition was soon relieved by the application of a lead and tar lotion. With rest in a shaded room and sedative treatment, the above signs have improved, but there are still marked general asthenia and muscular hypotonia. In my opinion, the child is suffering from erythroedema, which is also known as pink disease on account of the curious pink or red colour of the hands and feet. I am led to write this communication regarding an uncommon disease found in general practice, as I feel sure that many of my fellow-practitioners have met with cases similar to the above, which have proved puzzling. The main signs of the fully developed condition have been aptly described by A. Victor Neale in an alliteration of the words beginning with "P": peevishness, pinkness, pallor, perspiration, papules, peeling, pulse, posture, photophobia, paraesthesia, paresis, pyuria. The disease usually attacks children from 3 months to 5 years of age, even those who are well nourished, and lasts from three to nine months. The cause of the condition is unknown, and there is no specific treatment. A peripheral neuritis mainly affecting the sensory nerves, and showing a secondary vasomotor disturbance of the extremities is the principal pathological finding. Violet-ray treatment and raw liver (1 to 2 oz. daily) are said to have a beneficial effect. Fresh air, warmth, subdued light, rest, wholesome food, together with a lotion for the troublesome rash, are essential. Convalescence is usually slow, but the prognosis is good.

The Swab in Diphtheria Diagnosis

Dr. Janet M. C. Gray (Lewisham) writes: I have read with much interest the letters on diphtheria in the *Journal* of September 22nd and 29th. Most of the time I have been working in India, but was home on furlough in 1915, and for a short time was doing general practice. I had a fair number of cases of diphtheria in children: in each case, after taking a swab, I injected a full dose of the antitoxin, and all the cases recovered. As I never got an answer about the swab until the next day—it was a place in the country—I think the results might have been different had I waited. In India diphtheria is very rare, and, although I never had a case, I always kept antitoxin by me, because I felt so strongly there was no time to be lost.

Evipan Anaesthesia

Dr. J. T. Spiridion (Hankow) writes: I would like to add my own very satisfactory experiences with sodium evipan to those of Dr. Burke, published in the *Journal* of August 11th (p. 285). During the past three months I have used this anaesthetic on ten patients only—nine Europeans and one Chinese. It was given for the following minor operations: tooth extractions, four; opening deep abscesses, two; curettage, one; setting a fractured femur, one; repair of perineum, one; repair of crushed toe, one. No premedication was given in any of the cases: in one only was the operation performed by myself. All the patients enjoyed good general health, although two were alcoholic subjects; one of these required 11 c.cm. before losing consciousness—an unusually large dose—and the other suffered from a severe rigor one hour after the operation. In all the other cases the anaesthetic proved perfectly satisfactory and pleasant for both surgeon and patient. The theatre temperatures during the operations varied from 85° to 99° F., the average temperature being 92.4°. Sodium evipan does not, therefore, appear to exert any harmful effect on the liver during its detoxication, although the liver functions are easily upset in such hot weather. I believe the drug to be a very suitable anaesthetic in tropical areas where nitrous oxide is unobtainable.

Bacteriological Warfare

"M.D." writes from Yorkshire: We have read many articles recently in the popular press about destroying vast populations by bacteria spread from aeroplanes so cunningly that they can even find their way down the moving stairs into the tube stations. How horrible! Unfortunately I am not a bacteriologist, and so I appeal for information as to what variety of coccus or bacillus might be the innocent agent of such a campaign. I could conceive of masses of bacilli of the typhoid group being thrown down on water supplies, but it would be easy to combat this by boiling our drinking water. Again, would showers of *B. pestis* produce plague in the towns powdered with them, as a flea is usually the agent which carries it, so that it would be necessary to breed huge quantities of infected fleas and broadcast these in order to affect the underlying population to any appreciable extent. Even throwing down influenza germs would probably cause more stir among the bacteriologists, who would be arguing about their exact nature, than among those contaminated. But seriously, it appears to an ordinary physician that many alarmist declarations have been made in the Press for which there is inadequate bacteriological basis; or are there bacteria which are capable of infecting masses of people who come in contact with them casually, as they would were the germs spread from aeroplanes?

Gonococcal Infection

Dr. R. V. Storer (London, W.1) writes with reference to the notice of his book *Gonococcal Infection: Recent Advances in Pathology, Diagnosis, and Treatment*, which appeared in our issue of September 29th (p. 595): My views on this disease may seem "frankly heretical" to your critic, according to his own standards, but they have been accepted by venereologists in this country and America as being "sound and rational." Mr. Kenneth Walker, in his foreword, pointed out that this book "was marked by originality of thought and freedom from conventional views," but also suggested that "the fact that some of the author's dicta will meet with opposition is surely no disadvantage." When a medical man presents the results of his private research and clinical experience to his fellow practitioners, especially if his methods depend on a new concept of the pathology of a disease, I suppose he must expect to be called a "heretic," even though he is able to report a maximum degree of success. Your reviewer complains that the book contains "far too many errors," yet he mentions a trivial one only—namely, a figure based on a simple mental calculation, the mistake in which would be obvious even to a schoolboy. It has not been my desire to pose as a pontiff, as your critic suggests, but to present in all humility, and with due appreciation of its shortcomings, a clear, concise account of recent advances in gonococcal infection, based not only on the published works of other authorities, but on an experience gained by the intensive personal study of over five hundred cases throughout their course.

On October 15th the Edinburgh Branch of Watson and Sons (Electro-Medical) Limited, is moving to more commodious premises at 86, George Street, where there will be improved facilities for service work, and a showroom for the demonstration of apparatus.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 47, 48, 49, 50, 51, 54, 55, and 56 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 204.